

Diagnostic Engineering Publication

1410 / 7010

Subject: Diagnostic Program C020B
 1410 CPU Error Detection
Sequence Numbers 011, 012, 013, 014
Replaces C020A

- I. C020B obsoletes 1410 CPU Error Detection Program C020A. The general philosophies of C020B are the same as those of C020A with significant changes made to many routines. In addition, changes were incorporated into C020B to insure compatibility with 1410/7010 Tape Control Program TC50 ().
- II. The first data card of each of the four phases of C020B is a System Control Card and furnishes information to the program concerning CPU storage capacity.
- III. C020B consists of four phases, each independent of the other, except that TAD information is passed on from one phase to the next. The four phases are separated from each other by Branch Execute cards and Core Clear cards.

Enclosures: 167 **Pages**
Card Deck for CARD ONLY SYSTEMS (as punched by UP51)
 11 **Cards - Card Loader (1-7) and 4 Core Clear**
 624 **Cards No. 001-624 Data Cards**
 4 **Cards Branch Execute Card**

Distribution: x 1410 10K and 20K systems only
 7010
 Other

C020B

1410 CPU ERROR DETECTION PROGRAM

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2.02.00.0 TEST DESCRIPTION

00.1 MODIFICATIONS

C020B obsoletes and replaces 1410 CPU Error Detection Program C020A. Important changes were made to many of the routines that existed in C020A and several tests were added to increase the effectiveness of the program. Rearrangement of routines in the first three phases resulted in more efficient utilization of storage, enabled the inclusion of the necessary new routines without increasing the number of sections of the program, and made for a more logical presentation of the program listing. The most significant differences between C020A and C020B are described below.

- A. Subroutine No. 10.16 was added to insure that the Zero Balance indicator is turned on only by a zero result.
- B. Subroutine No. 11.02 was modified to insure that one-hundred positions of storage can be cleared to blanks by a Clear Storage instruction.
- C. Initialization of the I-address of a Restart- Branch instruction at location 00001 was changed in the first two phases. Subroutine No. 12.00 typifies the method used.
- D. All subroutines under No. 13.00 were modified in favor of a shorter method to initialize the contents of the index registers.
- E. Subroutine No. 14.01 was added to test a somewhat more complex method of addressing by indexing and to prove that an indexed Store Address Register instruction has no effect on the operation.
- F. Subroutine Nos. 18.02 through 18.05 of C020A were consolidated into two subroutines (Nos. 18.02 and 18.03) in C020B.
- G. Subroutine No. 21.01 was added to force the High and Low Compare Status Indicators to alternate rapidly and for a sustained period of time.
- H. C020B must be run from cards or in conjunction with Tape Control Program TC50 (). If input is from tape, C020B makes use of certain data that are available within TC50() as well as one closed subroutine within TC50 () for back-spacing tape.

00.2 DESCRIPTION

C020B was written to provide a thorough error detection test of the 1410 CPU Main Frame. This test begins with the simplest of instructions and those which are prerequisite to all following instructions and operations. In building-block fashion, the basic operations are used to prove instructions and operations of increasing complexity. After all operation codes are tested, the program concludes with a test of the ability to chain all possible operations followed by an optional test of certain resets and then followed by two routines which are intended to prove the reliability of a great number of chained D-ops and indexed Branch and Store B Register instructions.

The entire program is divided into routines and subroutines. When an operation or small group of operations is to be checked for the first time, a new routine number is assigned. Routine numbers are of the form MN.00 where MN specifies the number of the routine in numeric sequence. Subroutines under MN.00 are identified MN.XY where XY specifies the number of the subroutine in numeric sequence. The term "subroutine", as used here, is more properly a "subsection" of a larger routine. These "subroutines" are, for the most part, complete program entities. Within the comments portion of the listing the terms "routine" and "subroutine" are occasionally used interchangeably to refer to the current subsection under consideration. It is anticipated that a CPU malfunction which occurs during the execution of Routine Nos. 01.00 through 04.00 will be accompanied by a SYSTEM CHECK error. An attempt is made to indicate, by means of the console printer, certain errors that may be experienced in Routine Nos. 05.00 through 07.03. These typeouts cannot be bypassed. Beginning with Routine No. 07.04 and continuing through the remainder of the program, normal TAD options are in effect. Generally speaking, troubles should be fixed at the time of occurrence; this is especially true of troubles that arise during the first part of the program.

C020B consists of four, distinct, essentially independent phases which have a certain limited ability to communicate with one another. Alterations to the TADs, for example, made during C020B-1 will remain in effect through the remaining three phases or until changed. It was necessary to write the program in four phases so that it could be run on a system having 10K storage capacity.

The operation of C020B is slightly different depending upon whether the program input is from card or tape. If the input is from cards and TAD 3 has been set to a "1", the phase currently under test will be repeated indefinitely. If input is from tape and TAD 3 has been set to a "1", individual phases will not be repeated but rather the program will proceed through C020B-1 to C020B-2 to C020B-3 to C020B-4 and then repeat the sequence. C020B should be thought of as one program in four parts, not as four programs connected together. It is for this reason that the same identification, C020B, applies to all phases. The console printer will identify the phases as they are run.

In order to complete a "PASS", each phase is repeated, or looped, a number of times. The number of loops that constitute a "PASS" is determined by a loop counter at locations 01006-01010. Certain card records in each of the phases set this value to +00100.

Within each of the phases there is at least one routine which, for various reasons, is executed only once per program "PASS". In phase 1, the tests of Halt and Halt-Branch are performed only once regardless of the number of passes. In phase 2 the test for Compare, and in phase 3 the test for Multiply are performed only once per pass because they are lengthy routines. For this same reason, two miscellaneous routines, 31.01 and 31.02 in phase 4, are performed but once per pass. Because they require operator intervention, subroutines 30.01 and 30.02 in phase 4 are not performed unless TAD 4 has been set to "1". If these subroutines are performed, #30.02 resets TAD 4 to prevent repeated testing of them.

00.3 EQUIPMENT REQUIRED

- A. Card Reader or tape unit to load the program
- B. Console Printer (assumed on E channel)

Although C020B was written specially for 1410s of 10K and 20K capacity, there is nothing within the test to preclude its operation on 1410s or 7010s of up to 100K capacity. Installations with CPUs of greater than 20K storage capacity will be able to use C021B more advantageously.

00.4 CARD DECK

7 Cards ... Load Program L1A
 4 Cards ... Core Clear Card (09999-01000)
 4 Cards ... System Control Card (001, 184, 366, 549)
 620 Cards ... Program C020B
 (002-183, 185-365, 367-548, 550-624)
 4 Cards ... Branch Execute Cards

00.5 ENGINEERING CHANGE LEVEL OF MACHINE

C020B will operate on 1410's of any EC level unless an Engineering Change modifies the function or operation of the standard instruction set. Certain routines will not work properly on machines using the European Edit Feature.

00.6 PROGRAM RUN TIMES

The running times listed below in tabular form apply to the 1410 and the 1410 with the Accelerator feature No. 1007. Values are given in seconds and are approximate. Running times for the 1410 of 60K, 80K, and 100K storage capacity as well as that for the 1410 Accelerator of 100K are estimated. Times do not include the time required to load the program. In each case the loop counter was initialized at +00100.

1410

	<u>10K</u>	<u>20K</u>	<u>40K</u>	<u>60K</u>	<u>80K</u>	<u>100K</u>
C020B-1	10.5 sec	10.5 sec	10.5 sec	10.5 sec	10.5 sec	10.5 sec
C020B-2	9	9	9	9	9	9
C020B-3	23	23	23	23	23	23
C020B-4	4	10	21	32	43	54

1410 Accelerator

	<u>10K</u>	<u>20K</u>	<u>40K</u>	<u>60K</u>	<u>80K</u>	<u>100K</u>
C020B-1	10 sec	10 sec	10 sec	10 sec	10 sec	10 sec
C020B-2	8	8	8	8	8	8
C020B-3	19	19	19	19	19	19
C020B-4	3.5	8	16	26	36	45

2.02.01.0 LOADING PROCEDURES

01.1 FROM CARDS

- A. Clear storage to blanks
- B. Display and Alter location 00000 as follows:
 - i. $\checkmark\checkmark$ RL%1100011\$. if reader is on E channel
 - ii. $\checkmark\checkmark$ XL Σ 1100011\$. if reader is on F channel
- C. Set MODE switch to RUN, Computer Reset and Start.

01.2 FROM TAPE:

- A. Clear storage to blanks
- B. Display and Alter location 00000 as follows:
 - i. $\checkmark\checkmark$ RL%B000011\$. if tape unit is on E channel
 - ii. $\checkmark\checkmark$ XL Σ B000011\$. if tape unit is on F channel
- C. Set MODE switch to RUN, Computer Reset and Start.

2.02.02.0 OPERATING PROCEDURES

No special instructions are necessary to run the program. Operation begins immediately upon reading the last record of each of the four phases.

All TADs are initialized to "not 1" by a card record and normal operation of C020B, described below, does not require that any TAD information be entered by the Customer Engineer. By "normal operation" is meant that all typeouts are allowed, no routine will loop on error, there will be no error halts, only one pass of each phase will be performed, and Routine Nos. 30.01 and 30.02, which require operator intervention, will be bypassed.

The significance of the TADs is as follows:

<u>TAD</u>	<u>LOCATION</u>	<u>NOT 1 (NORMAL)</u>	<u>1</u>
TAD0	01000	Allow all typeouts	Bypass all error typeouts
TAD1	01001	Not loop on error	Loop routine if error
TAD2	01002	Not halt on error	Halt on routine if error
TAD3	01003	One program pass	Repeat program indefinitely
TAD4	01004	Not perform #30.01 and #30.02	Perform #30.01 and #30.02

It is suggested that once, during the execution of C020B, TAD 4 at location 01004 be set to a "1" so that certain functions of the reset keys may be tested by routines #30.01 and #30.02. TAD 4 is the only special TAD used by this program.

Except for 10K systems, it is required that some character other than 0, \$, !, ?, b, X, -, or & be placed in location 01257. This location is supplied by column 14 of the System Control Cards and normally will indicate the ten-thousands order of the greatest storage address.

2.02.03.0 OPERATING HINTS AND COMMENTS

As mentioned earlier, C020B consists of four separate phases which are essentially independent of each other. The card deck contains an unnumbered Execute-Branch card and a 9K Core Clear card between each of the phases. Except for the TADs, which are saved and restored from phase to phase, no essential information is carried over from one phase into the next.

When running C020B, it is recommended that all phases of the program be executed, but if the situation demands, the Customer Engineer may run, for example, only C020B-4 and not the phases 1 through 3. In this case, it is important to realize precisely which cards constitute the separate phases; this information is tabulated below:

<u>PHASE</u>	<u>CARD NUMBERS</u>
C020B-1	001 through 183
C020B-2	184 through 365
C020B-3	366 through 548
C020B-4	549 through Last Execute Card

To run any phase independently of the others it is necessary only to locate and remove the cards comprising the desired phase, together with the Load Program. The selected section of C020B may then be loaded in the normal manner and run independently.

With the understanding that the CE occasionally wishes to enter his own instruction sequence and data for the purpose of testing a specific condition, and yet leave the main program undisturbed, the following "safe" areas in the various phases are listed. Note that no location below address 01000 can be considered "safe" since the load program or TC50 () resides there and the areas not used by the load program or TC50() are used as work areas by all phases of C020B.

<u>PHASE</u>	<u>AREAS AVAILABLE FOR PATCHING</u>
C020B-1	All locations above and including 09995 01995-01999 01220-01229
C020B-2	All locations above and including 09998 01967-01999 01220-01229
C020B-3	All locations above and including 09991 01931-01999 01220-01229
C020B-4	04545 - 04899 01992 - 01999 01220 - 01229

TADs or other data within the program may be altered in the following manner:

- (1) Depress Inquiry Request key
- (2) When "I" types, enter five numeric characters which specify the address of the high-order location, i. e., low memory address, to be altered
- (3) Depress Inquiry Release key
- (4) Depress Inquiry Request key
- (5) Enter desired information
- (6) Depress Inquiry Release key

If an error is made while keying in an address or data (steps 2 or 5), depress the Inquiry Cancel key and resume from the step which preceded the error.

2.02.03.0 OPERATING HINTS AND COMMENTS (Continued)

Because of space limitations, the opportunity to recognize an Inquiry Request is provided only once per phase loop. Furthermore, because the first loop of the latter three phases requires considerably more time than succeeding loops, there may be a considerable delay between depression of the Inquiry Request key and its acknowledgement.

In compiling and revising this program, considerable effort was spent toward making the listing easier to follow. Very little change was made to the fourth phase which was, and still is, largely sequential in its presentation. With regard to the first three phases, however, a certain standard pattern was adopted for clarity: Each phase begins at location 02000 and proceeds straightforward toward end-of-memory location 09999. At a convenient spot in the program, prior to end-of-memory, the test branches to the lowest location available, 01289, and from there proceeds towards location 02000. This is the instruction sequence that is followed in cyclic fashion as the phases are repeated. Constants and work areas are assigned immediately following the last instruction at the highest storage location and appear as the last part of the listing of any phase.

Note especially that TAD 1, if set to "1", provides for looping on an error subroutine only so long as that subroutine is in error. If a subroutine only intermittently causes errors and the CE wishes to increase its frequency of occurrence in any given time period, he is advised to alter the program, temporarily, so that it does not proceed beyond the suspect subroutine. Perhaps the simplest method, although not necessarily the shortest one, is to change the first instruction of the next subroutine in sequence to an unconditional Branch to the start of the error-causing subroutine.

If the program is stopped and the instruction address register reset to location 00001 and then restarted at any time except when the CE is specifically directed to do so, operation will resume as though the phase under test is begun anew. Two additional exceptions are as follows: (1) the program and phase identification is not retyped and (2) during phase 1 a considerable number of routines must be executed one time before sufficient circuitry has been verified to allow the placement of a restart address at location 00001.

It is essential that C020B be loaded by means of the 7-card loader L1A or the Tape Control Program TC50(). Proper operation of all aspects of C020B depend on the contents of storage locations that are only set by L1A or TC50 ().

Pay especial attention to the comments portion of the listing. These notes are provided to give some insight into the method of test and the expected results.

2.02.04.0 PROGRAM STOPS AND RESTARTS

There are only two normal stops that occur during the running of C020B; these are experienced when Halt and Halt-Branch operations are tested and are accompanied by informative typeouts. Press the Start key to continue.

If TAD 4 is set to "1", two stops will occur in the fourth phase. The Console Printer will direct the Customer Engineer to depress a reset key and Start.

During most of the time that C020B is being run, an appropriate restart Branch instruction is located at 00001. The restrictions on this condition are noted in the previous section of this write-up.

2.02.05.0 TYPEOUTS

A. NORMAL TYPEOUTS

1. C020B-X, where "X" is the phase under test.
2. -PASS-. Typed at the conclusion of a predetermined number of program loops.
Note: This typeout appears at the end of the separate phases if the input is on cards. It is given only at the end of C020B-4 if the input is on tape.
3. PROG HLT. PRESS START. This typeout appears when the Halt instruction is tested.
4. PROG HLT/BR. PRESS START. This typeout is given when the Halt-and-Branch instruction is tested.
5. PRESS PROGRAM RESET AND START.
Associated with subroutine # 30.01. Typed only if TAD 4 is set to "1".
6. PRESS COMPUTER RESET AND START.
Associated with subroutine #30.02. Typed only if TAD 4 is set to "1".

B. ERROR TYPEOUTS

Most routines and subroutines within C020B provide an error typeout of the form #MN.XY where MN specifies the section or routine number and XY the subsection or subroutine number. Sections of the program labeled in this manner which do not provide this typeout are 01.00 through 04.00, 10.17, 12.00 and 31.02. In many subroutines, the subroutine number will be typed if any of several errors occur; for example, #19.57, test of the SCNRM operation, will be typed if the A- or B-address is incorrect after the scan is performed with either the record mark or group mark-word mark as the terminal character. If any data are moved by the SCNRM, the typeout #19.57 will also occur. In cases of the type just described, it is left to the ingenuity of the Customer Engineer to determine precisely where the test failed.

Subroutines # 18.01, #23.01, #24.02, #30.01 and #30.02 provide error typeouts in addition to their respective subroutine numbers. These additional typeouts are discussed in some detail below.

18.01
VS ERR W X Y Z

The two asterisks (*) represent the A- and B- fields, in that order, of the single character compare operation which was found in error. The letters W X Y Z represent one or more of the ten possible error types that are tested by #18.01 and will be printed as a numeric digit (or digits) 1 through 9 or an alphabetic "X" (for Roman numeral "10"). The CE is referred to the COMPARE flow chart for the significance of the error numbers.

#23.01
AB PROD XYZ; S/B ZERO

A and B represent the A-field multiplicand and the B-field multiplier, respectively. They may be any of the 64 possible legitimate characters. The product of AB is given by XYZ and should have been zero; either the product of AB was not zero or the zero balance indicator did not come on.

#23.01

AB PROD XYZ; S/B NZ

Similar to the example just described. Neither factor A nor B was zero or any of its equivalents. The product of AB should not have been zero but a test of the zero balance indicator found it on.

#23.01

AB PROD XYZ; S/B NEG

The factors A and B were so signed that a product with only a B bit in the units position was expected. The product of AB did not yield the anticipated negative result.

#23.01

AB PROD XYZ; S/B POS

Similar to the example just described. The product of AB did not yield the anticipated positive result.

#23.01

AB PROD UVW; NE BA PROD XYZ

The product of any two characters should yield the same result regardless of which character is the multiplier or the multiplicand. This typeout indicates that UVW, the product of A and B, was not equal to XYZ, the product of B and A. The products of both factors are given for comparison.

#24.02

B/A EQ Q, REM R; NEQ [A][Q]PLUS R

B, A, Q and R represent signed integers but A is not allowed to be equal to zero. This typeout indicates a failure to recover the dividend B when the product of the divisor A and quotient Q is algebraically added to the remainder R.

#24.02
00B/A CAUSED DIV OFLOW

A test of the Divide Overflow indicator found it on after performing the indicated division. Since A is never zero, the indicator should never come on.

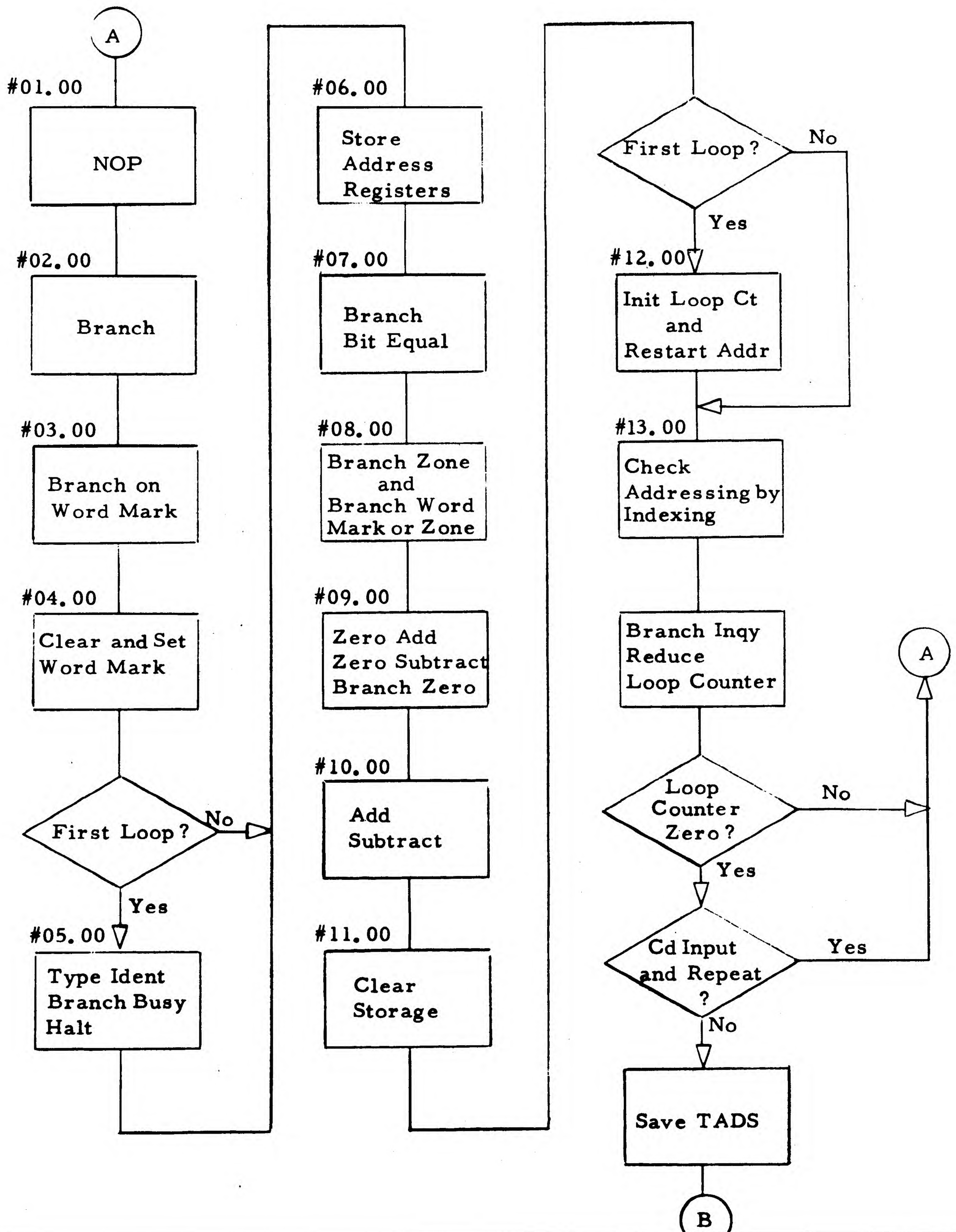
#30.01
B EQUAL A RESET
ARITH OFLOW RESET
DIV OFLOW RESET
ZERO BAL RESET

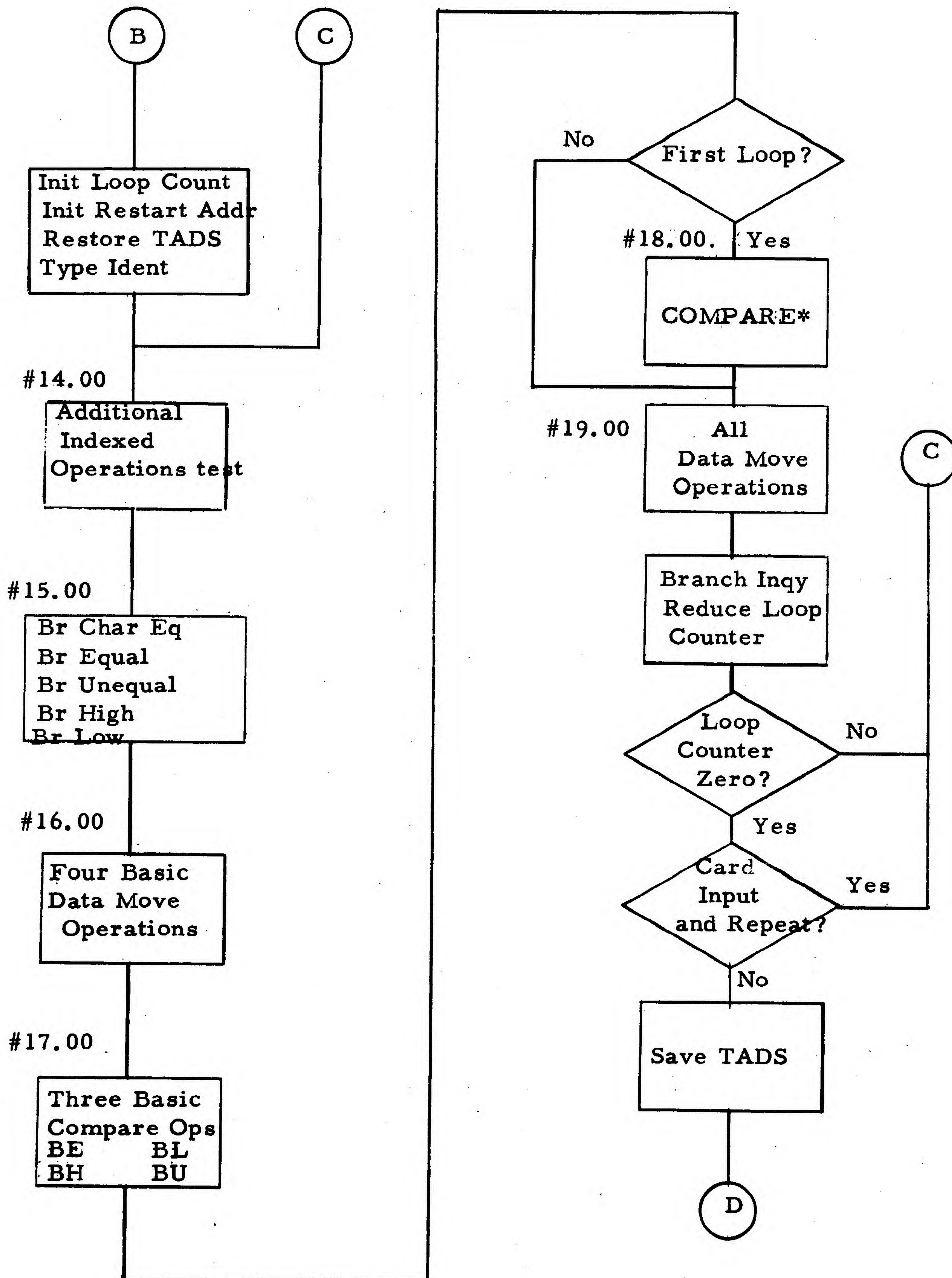
Subroutine # 30.01 tests certain functions of the Program Reset key. This typeout points out that one or more of the specified indicators was reset by the Program Reset key.

#30.02
FAIL TO SET B<A
ARITH OFLOW NOT RESET
DIV OFLOW NOT RESET
ZERO BAL NOT RESET

In a manner similar to that just described in the preceding example, some functions of the Computer Reset key are tested. The typeout will indicate which of the error indications was detected.

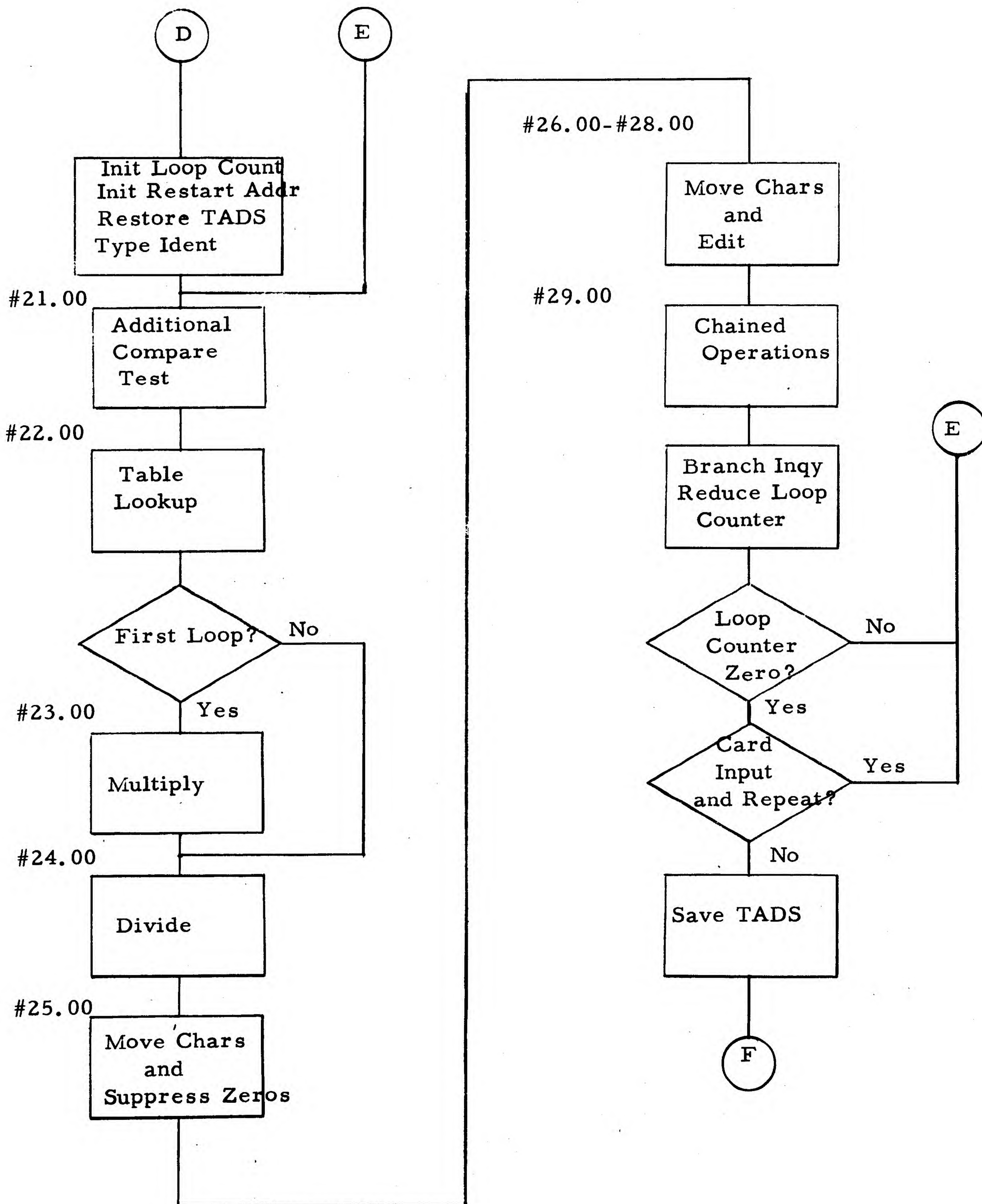
C020 B-1

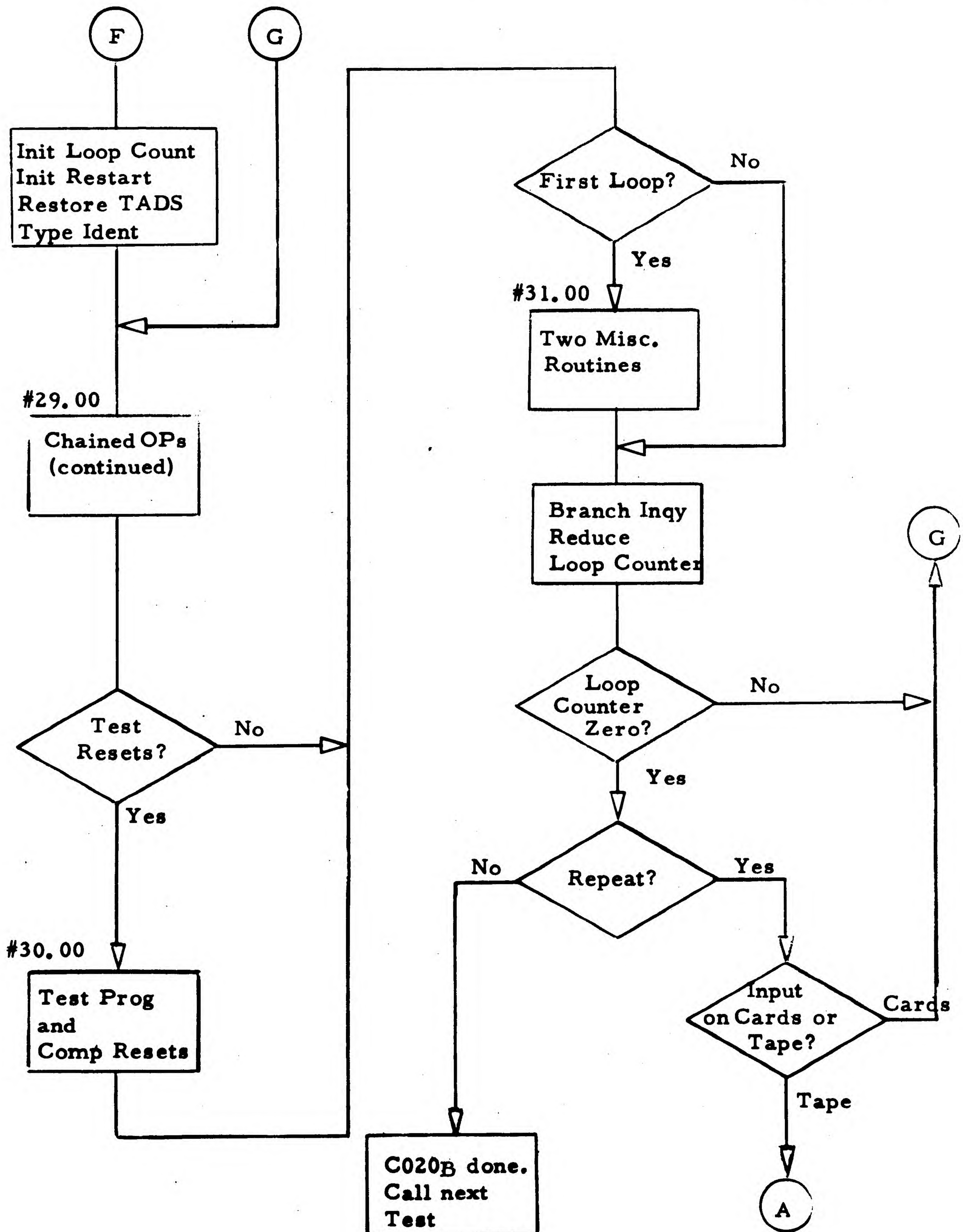


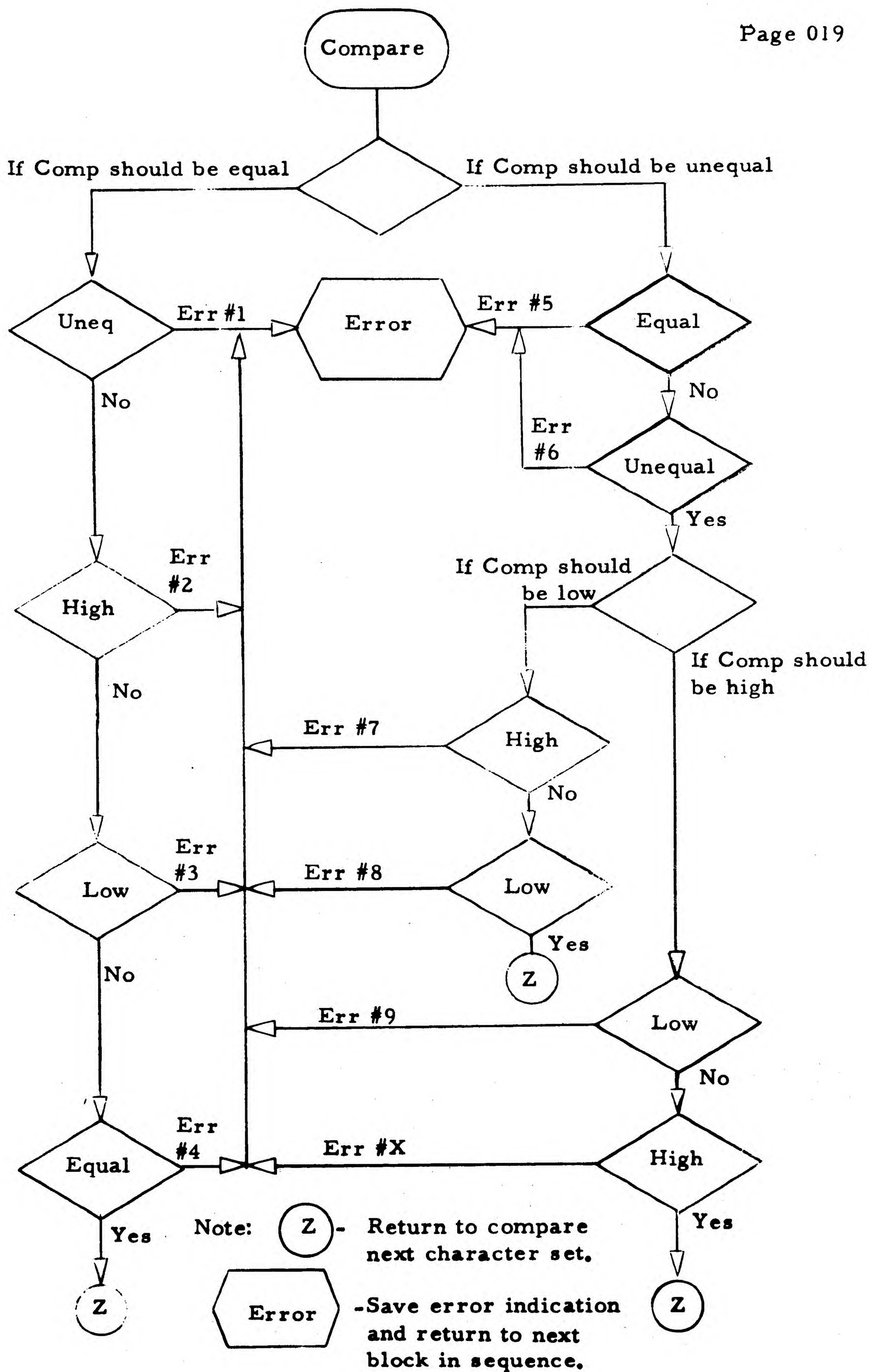


* See detailed COMPARE flow chart

C020B-3







CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

1002	CTL	3
1003	LOAD	
1004	LINES	35
1005	LOADER	400
1006	TADO	1000
1007	TAD1	1001
1008	TAD2	1002
1009	TAD3	1003
1010	TAD4	1004
1011	PCC	1010
1012	PCCWK	1015
1013	HOLDA1	1020
1014	HOLDA2	1020
1015	HOLDA3	1020
1016	HOLDA4	1020
1017	HOLDB1	1025
1018	HOLDB2	1025
1019	HOLDB3	1025
1020	HOLDB4	1025
1021	TYPE	1026
1022	TYPCK	TYPE&45
1023	INQ	TYPE&131
1024	GPMK	SPECL1
1025	QUOT	SPECL2
1026	TPMK	SPECL3
1027	DELT	SPECL4
1028	CTLIND	1230
1029	IDENT	1250
1030	SYSCTL	1256
1031	MEMSIZ	1257
1032	LOWLCC	1289
1033	START	2000

PGLIN LABEL OPCOD OPERAND CT ADDR INSTRUCTION

1035 01256

1035 SYSC TL NOTE -- THE ONLY POSITION IN THE SYSTEM
1036 CONTROL CARD REQUIRED BY THIS PROGRAM
1037 IS STORAGE LOCATION 01257. THIS INFOR-
1038 MATION COMES FROM CARD 001, COLUMN 14,
1039 AND MUST BE PUNCHED WITH A NUMERIC
1040 CHARACTER EQUAL TO THE TEN-THOUSANDS
1041 DIGIT OF THE HIGHEST STORAGE ADDRESS.
1042

33 01288

#2

DC a

01230

ORG CTLIND

9 01238

DC a a

11 01249

1047 DCW a1.12.101J0Za 10K OR 20K, SEQ NO. 011,
1048 DUMP TO 09999 ON TAPE

01000

ORG 1000

1 01000

DC a a ALLOW ALL TYPEOUTS

1 01001

a a DO NOT LOOP ON ERROR

1 01002

a a DO NOT HALT ON ERROR

1 01003

a a PERFORM ONLY ONE PASS

1 01004

a a,G DO NOT TEST TWO ROUTINES, PHASE 4

5 01010

DCW E00100 PASS COUNT CONSTANT

5 01015

a a PASS COUNT WORK AREA

5 01020

DCW a a . COMMON AREA FOR STORING

5 01025

a a . ADDRESS REGISTERS

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1063		SBR	*£9	7	01026	G 01041 B
1064		WCP	0	10	01033	M £T0 00000 W
1065		SBR	*£20	7	01043	G 01069 B
1066		BCB1	*--23	7	01050	R 01033 2
1067		BA1	*£1	7	01057	R 01064 M
1068		B	0	7	01064	J 00000
1069						
1070		SBR	*£39	7	01071	G 01116 B
1071		SBR	*£65	7	01078	G 01149 B
1072		A	*--17,*£54	11	01085	A 01078 01149
1073		BBE	*£25,TAD0,1	12	01096	W 01132 01000 1
1074		WCP	0	10	01108	M £T0 00000 W
1075		BCB1	*--16	7	01118	R 01108 2
1076		BA1	*£1	7	01125	R 01132 M
1077		BBE	*£8,TAD2,1	12	01132	W 01151 01002 1
1078		B	0	7	01144	J 00000
1079		H	*--12	6	01151	. 01144
1080						
1081		RCP	*£26	10	01157	M £T0 01192 R
1082		BNT1	*£39 T	7	01167	R 01212 B
1083		BEX1	*--23,M	7	01174	R 01157 M
1084		BA1	*£1	7	01181	R 01188 M
1085		RCPW	0	10	01188	L £T0 00000 R
1086		BEX1	*--16,M	7	01198	R 01188 M
1087		BA1	*£1	7	01205	R 01212 M
1088		B	REDUCE	7	01212	J 01866
1089	GMWM	DCH	ama	1	01219	
1090						
1091		ORG	IDENT		01250	
1092						
1093		DCH	aC020B2.G	5	01254	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1095			PHASE 1 BEGINS HERE		02000	
1096						
1097	ROUTINE 01.00		CHECK LONG NO-UP INSTRUCTION			
1098		NOP		1	02000	N
1099		DC	a 1234567890# ^{WBS} a.TMB/STUVWXYZ# ^Q SSMa ^{LLG}	32	02032	
1100			a-JKLMNOPQR ^{R.D} .S*B,L&ABCDEFGHIJ.M.BTMa	32	02064	
1101						
1102	ROUTINE 02.00		CHECK UNCOND BR INST. THIS ROUTINE ASSUMES THAT			
1103			WM-BL WILL GIVE INSTRUCTION CK IF BRANCH FAILS			
1104						
1105		B	*E1	7	02065	J 02072
1106		B	*E2	7	02072	J 02080
1107		DCW	a a	1	02079	
1108						
1109	ROUTINE 03.00		CHECK BRANCH ON WORD MARK INSTRUCTION			
1110	AC	BW	AD,AD	12	02080	V 02105 02105 1
1111		BW	AE,*E1	12	02092	V 02106 02104 1
1112		DCW	a a ^G	1	02104	
1113	AD	DC	aMa	1	02105	
1114						
1115	ROUTINE 04.00		CHECK CLEAR AND SET WORD MARK INSTRUCTIONS			
1116						
1117	AE	CW	AC,AE	11	02106	□ 02080 02106
1118		BW	AF-1,AC	12	02117	V 02165 02080 1
1119		BW	AF,AE	12	02129	V 02166 02106 1
1120		SW	AE,AC	11	02141	• 02106 02080
1121		BW	*E4,AE	12	02152	V 02167 02106 1
1122	AF	DCW	a 12a	3	02166	
1123		BW	*E2,AC	12	02167	V 02180 02080 1
1124		DCW	a a	1	02179	

PGLIN LABEL INSTRUCTION CT ADDR

1126 ROUTINE 05.00 TYPE IDENT, CK TYPEWR BUSY, HALT, HALT/BR.
1127 THESE OPS PERFORMED ONLY FIRST TIME THROUGH

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1128				1	02180	N
1129		NOPWM				
1130		B	AJ	7	02181	J 02371
1131		SW	*-12	6	02188	, 02181
1132	AG	WCP	PGMID	10	02194	M %TO 02306 W
1133		BAL	*%1	7	02204	R 02211 M
1134		WCP	BUSYNG	10	02211	M %TO 02315 W
1135		BCB1	*%2	7	02221	R 02229 2
1136		DCW	@ @	1	02228	
1137	AH	NOPWM		1	02229	N
1138		B	AJ	7	02230	J 02371
1139		BW	AJ,997	12	02237	V 02371 00997 1
1140		WCP	GOMSG1	10	02249	M %TO 02322 W
1141		BCB1	*-16	7	02259	R 02249 2
1142		BAL	*%1	7	02266	R 02273 M
1143		H		1	02273	.
1144		WCP	GOMSG2	10	02274	M %TO 02345 W
1145		BCB1	AI	7	02284	R 02305 2
1146		BAL	*%1	7	02291	R 02298 M
1147		H	AJ	6	02298	. 02371
1148	AI	DCW	@ 1@	2	02305	
1149						
1150	PGMID	DC	@ C020B-1@,G	8	02306	
1151	BUSYNG		@#05.00@,G	6	02315	
1152	GOMSG1		@PROG HLT. PRESS START@,G	22	02322	
1153	GOMSG2		@PROG HLT/BR. PRESS START@,G	25	02345	

PGLIN	LABEL	ROUTINE	OP6.00	CHECK OPERATION OF SAR AND SBR INSTRUCTIONS	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1155		ROUTINE	06.00						
1156									
1157	AJ		B	AK			7	02371	J 02378
1158	AK		NOPWM				1	02378	N
1159			B	AL			7	02379	J 02431
1160			SW	AK&1			6	02386	, 02379
1161			CW	1,AN&1			11	02392	□ 00001 02501
1162			SBR	AJ&5			7	02403	G 02376 B
1163			SAR	AJ&5			7	02410	G 02376 A
1164			SBR	AJ&5			7	02417	G 02376 B
1165			B	AJ			7	02424	J 02371
1166	AL		WCP	ER0600			10	02431	M 810 02493 W
1167			BCB1	*-16			7	02441	R 02431 2
1168			BAL	*&1			7	02448	R 02455 M
1169			H				1	02455	.
1170	AM		CW	1,2			11	02456	□ 00001 00002
1171			SAR	ABHOLD			7	02467	G 02492 A
1172			SBR	ABHOLD			7	02474	G 02492 B
1173			B	AM			7	02481	J 02456
1174	ABHOLD		DCW	00000			5	02492	
1175	ER0600			2#06.002,G			6	02493	
1176									
1177	AN		CW	A0&1,2			11	02500	□ 02540 00002
1178			SAR	AJ&5			7	02511	G 02376 A
1179			SBR	AJ&5			7	02518	G 02376 B
1180			SAR	AJ&5			7	02525	G 02376 A
1181			B	AJ			7	02532	J 02371
1182	AO		CW	AK&1			6	02539	□ 02379
1183			SAR	AJ&5			7	02545	G 02376 A
1184			SW	1			6	02552	, 00001

I-ADDR MODIFIED WITHIN ROUTINE
NOTE. BR TO 0000 INDICATES SBR FAILURE
. BR TO 00001 INDICATES SAR FAILURE

SET UP A & B ADDR REGISTERS

BOTH SAR & SBR FAIL. PRESS START
TO LOOP. FIX BEFORE PROCEEDING.

SET UP A & B ADDR REGISTERS

RESET NOP/BR SWITCH
RESTORE I-ADDR OF AJ
SET WM BACK IN LOC 00001

CT ADDR INSTRUCTION

PGLIN

LABEL

OPCODE

OPERAND

ROUTINE 07.00 CHECK OPERATION OF BRANCH BIT EQUAL INSTRUCTION

SUB-RTN 07.01

SHOULD BRANCH

AP,*,1

WCP ER0701

BCB1 *-16

BAL *E1

H

BBE *E1,*,1

B *-18

THESE INSTRUCTIONS PROVIDE

TIGHT LOOP IN EVENT OF FAILURE

BBE 1 EQ 1 FAILS. PRESS START

TO LOOP. FIX BEFORE PROCEEDING.

SUB-RTN 07.02

SHOULD NOT BRANCH

*E8,AQ&11,1

B AQ

WCP ER0702

BCB1 *-16

BAL *E1

H

BBE *E1,AQ&11,1

B *-18

THESE INSTRUCTIONS PROVIDE

TIGHT LOOP IN EVENT OF FAILURE

BBE FAILURE. PRESS START TO LOOP.

FIX THIS BEFORE PROCEEDING.

SUB-RTN 07.03

SHOULD NOT BRANCH

*E8,AP&11,1

B AR

WCP ER0703

BCB1 *-16

BAL *E1

H

BBE *E1,AP&11,1

B *-18

THESE INSTRUCTIONS PROVIDE

TIGHT LOOP IN EVENT OF FAILURE

SAME AS #07.02 ABOVE

ER0703

DCW *#07.03&2,G

SUB-RTN 07.04

SHOULD BRANCH

AU,*,2

12 02558 W 02621 02569 1

10 02570 M X10 02614 W

7 02580 R 02570 2

7 02587 R 02594 M

1 02594 .

12 02595 W 02607 02606 1

7 02607 J 02595

6 02614

12 02621 W 02640 02702 1

7 02633 J 02691

10 02640 M X10 02684 W

7 02650 R 02640 2

7 02657 R 02664 M

1 02664 .

12 02665 W 02677 02702 1

7 02677 J 02665

6 02684

12 02691 W 02710 02632 1

7 02703 J 02761

10 02710 M X10 02754 W

7 02720 R 02710 2

7 02727 R 02734 M

1 02734 .

12 02735 W 02747 02632 1

7 02747 J 02735

6 02754

12 02761 W 02831 02772 2

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1221		BBE	AS,TADO,1	12	02773	W 02799 01000 1
1222		B	TYPE	7	02785	J 01026
1223		DCW	a#07.04a,G	6	02797	
1224	AS	BBE	AT,TAD2,1	12	02799	W 02818 01002 1
1225		B	*£2	7	02811	J 02819
1226	AT	H		1	02818	.
1227		BBE	AR,TAD1,1	12	02819	W 02761 01001 1
1228		SUB-RTN 07.05				
1229	AU	BBE	*£8,AX£11,2	12	02831	W 02850 02919 2
1230		B	AX	7	02843	J 02908
1231		BBE	AV,TADO,1	12	02850	W 02876 01000 1
1232		B	TYPE	7	02862	J 01026
1233		DCW	a#07.05a,G	6	02874	
1234	AV	BBE	AW,TAD2,1	12	02876	W 02895 01002 1
1235		B	*£2	7	02888	J 02896
1236	AW	H		1	02895	.
1237		BBE	AU,TAD1,1	12	02896	W 02831 01001 1
1238		SUB-RTN 07.06				
1239	AX	BBE	*£8,AU£11,8 ^L	12	02908	W 02927 02842 8 ^L
1240		B	BA	7	02920	J 02985
1241		BBE	AY,TADO,1	12	02927	W 02953 01000 1
1242		B	TYPE	7	02939	J 01026
1243		DCW	a#07.06a,G	6	02951	
1244	AY	BBE	AZ,TAD2,1	12	02953	W 02972 01002 1
1245		B	*£2	7	02965	J 02973
1246	AZ	H		1	02972	.
1247		BBE	AX,TAD1,1	12	02973	W 02908 01001 1
1248		SUB-RTN 07.07				
1249	BA	BBE	BD,*,4	12	02985	W 03055 02996 4
1250		BBE	BB,TADO,1	12	02997	W 03023 01000 1
1251		B	TYPE	7	03009	J 01026
1252		DCW	a#07.07a,G	6	03021	
1253	BB	BBE	BC,TAD2,1	12	03023	W 03042 01002 1
1254		B	*£2	7	03035	J 03043
1255	BC	H		1	03042	.

PGLIN

LABEL

OPCOD

OPERAND

CT ADDR

INSTRUCTION

1256		B8E	BA,TAD1,1	12	03043	W 02985 01001 1
1257	SUB-RTN 07.08					
1258	BD	B8E	*E8,BG&11,4	12	03055	W 03074 03143 4
1259		B	BG	7	03067	J 03132
1260		B8E	BE,TAD0,1	12	03074	W 03100 01000 1
1261		B	TYPE	7	03086	J 01026
1262		DCW	@#07.08@,G	6	03098	
1263	BE	B8E	BF,TAD2,1	12	03100	W 03119 01002 1
1264		B	*E2	7	03112	J 03120
1265	BF	H		1	03119	.
1266		B8E	BD,TAD1,1	12	03120	W 03055 01001 1
1267	SUB-RTN 07.09					
1268	BG	B8E	*E8,BD&11,.	12	03132	W 03151 03066 .
1269		B	BJ	7	03144	J 03209
1270		B8E	BH,TAD0,1	12	03151	W 03177 01000 1
1271		B	TYPE	7	03163	J 01026
1272		DCW	@#07.09@,G	6	03175	
1273	BH	B8E	BI,TAD2,1	12	03177	W 03196 01002 1
1274		B	*E2	7	03189	J 03197
1275	BI	H		1	03196	.
1276		B8E	BG,TAD1,1	12	03197	W 03132 01001 1
1277	SUB-RTN 07.10					
1278	BJ	B8E	BM,*,8	12	03209	W 03279 03220 8
1279		B8E	BK,TAD0,1	12	03221	W 03247 01000 1
1280		B	TYPE	7	03233	J 01026
1281		DCW	@#07.10@,G	6	03245	
1282	BK	B8E	BL,TAD2,1	12	03247	W 03266 01002 1
1283		B	*E2	7	03259	J 03267
1284	BL	H		1	03266	.
1285		B8E	BJ,TAD1,1	12	03267	W 03209 01001 1
1286	SUB-RTN 07.11					
1287	BM	B8E	*E8,BP&11,8	12	03279	W 03298 03367 8
1288		B	BP	7	03291	J 03356
1289		B8E	BN,TAD0,1	12	03298	W 03324 01000 1
1290		B	TYPE	7	03310	J 01026

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1291		DCW	a#07.11a,G	6	03322	
1292	BN	B8E	BO,TAD2,1	12	03324	W 03343 01002 1
1293		B	*£2	7	03336	J 03344
1294	BO	H		1	03343	.
1295		B8E	BM,TAD1,1	12	03344	W 03279 01001 1
1296	SUB-RTN 07.12					
1297	BP	B8E	*£8,BM£11,G	12	03356	W 03375 03290 G
1298		B	BS	7	03368	J 03433
1299		B8E	BQ,TAD0,1	12	03375	W 03401 01000 1
1300		B	TYPE	7	03387	J 01026
1301		DCW	a#07.12a,G	6	03399	
1302	BQ	B8E	BR,TAD2,1	12	03401	W 03420 01002 1
1303		B	*£2	7	03413	J 03421
1304	BR	H		1	03420	.
1305		B8E	BP,TAD1,1	12	03421	W 03356 01001 1
1306	SUB-RTN 07.13					
1307	BS	B8E	BV,* ^S ,B	12	03433	W 03503 03444 ^S B
1308		B8E	BT,TAD0,1	12	03445	W 03471 01000 1
1309		B	TYPE	7	03457	J 01026
1310		DCW	a#07.13a,G	6	03469	
1311	BT	B8E	BU,TAD2,1	12	03471	W 03490 01002 1
1312		B	*£2	7	03483	J 03491
1313	BU	H		1	03490	.
1314		B8E	BS,TAD1,1	12	03491	W 03433 01001 1
1315	SUB-RTN 07.14					
1316	BV	B8E	*£8,BY£11, ^S B	12	03503	W 03522 03591 ^S B
1317		B	BY	7	03515	J 03580
1318		B8E	BW,TAD0,1	12	03522	W 03548 01000 1
1319		B	TYPE	7	03534	J 01026
1320		DCW	a#07.14a,G	6	03546	
1321	BW	B8E	BX,TAD2,1	12	03548	W 03567 01002 1
1322		B	*£2	7	03560	J 03568
1323	BX	H		1	03567	.
1324		B8E	BV,TAD1,1	12	03568	W 03503 01001 1
1325	SUB-RTN 07.15					

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1326	BY	B8E	*E8,BV&11,L ^C	12	03580	W 03599 03514 L ^D
1327		B	CB	7	03592	J 03657
1328		B8E	BZ,TADO,1	12	03599	W 03625 01000 1
1329		B	TYPE	7	03611	J 01026
1330		DCW	a#07.15a,G	6	03623	
1331	BZ	B8E	CA,TAD2,1	12	03625	W 03644 01002 1
1332		B	*E2	7	03637	J 03645
1333	CA	H		1	03644	.
1334		B8E	BY,TAD1,1	12	03645	W 03580 01001 1
1335	SUB-RTN 07.16					
1336	CB	B8E	CE,*,-	12	03657	W 03727 03668 -
1337		B8E	CC,TADO,1	12	03669	W 03695 01000 1
1338		B	TYPE	7	03681	J 01026
1339		DCW	a#07.16a,G	6	03693	
1340	CC	B8E	CD,TAD2,1	12	03695	W 03714 01002 1
1341		B	*E2	7	03707	J 03715
1342	CD	H		1	03714	.
1343		B8E	CB,TAD1,1	12	03715	W 03657 01001 1
1344	SUB-RTN 07.17					
1345	CE	B8E	*E8,CE&11,-	12	03727	W 03746 03815 -
1346		B	CH	7	03739	J 03804
1347		B8E	CF,TADO,1	12	03746	W 03772 01000 1
1348		B	TYPE	7	03758	J 01026
1349		DCW	a#07.17a,G	6	03770	
1350	CF	B8E	CG,TAD2,1	12	03772	W 03791 01002 1
1351		B	*E2	7	03784	J 03792
1352	CG	H		1	03791	.
1353		B8E	CE,TAD1,1	12	03792	W 03727 01001 1
1354	SUB-RTN 07.18					
1355	CH	B8E	*E8,CE&11,M ^S	12	03804	W 03823 03738 M ^S
1356		B	CK	7	03816	J 03881
1357		B8E	CI,TADO,1	12	03823	W 03849 01000 1
1358		B	TYPE	7	03835	J 01026
1359		DCW	a#07.18a,G	6	03847	
1360	CI	B8E	CJ,TAD2,1	12	03849	W 03868 01002 1

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1361		B	*E2	7	03861	J 03869
1362	CJ	H		1	03868	.
1363		B8E	CH,TAD1,1	12	03869	W 03804 01001 1
1364		SUB-RTN 07.19				
1365	CK	B8E	*E8,*,	12	03881	W 03900 03892
1366		B	CN	7	03893	J 03958
1367		B8E	CL,TAD0,1	12	03900	W 03926 01000 1
1368		B	TYPE	7	03912	J 01026
1369		DCW	@#07.19@,G	6	03924	
1370	CL	B8E	CM,TAD2,1	12	03926	W 03945 01002 1
1371		B	*E2	7	03938	J 03946
1372	CM	H		1	03945	.
1373		B8E	CK,TAD1,1	12	03946	W 03881 01001 1
1374		SUB-RTN 07.20				
1375	CN	B8E	*E8,CQ&11,	12	03958	W 03977 04046
1376		B	CQ	7	03970	J 04035
1377		B8E	CO,TAD0,1	12	03977	W 04003 01000 1
1378		B	TYPE	7	03989	J 01026
1379		DCW	@#07.20@,G	6	04001	
1380	CO	B8E	CP,TAD2,1	12	04003	W 04022 01002 1
1381		B	*E2	7	04015	J 04023
1382	CP	H		1	04022	.
1383		B8E	CN,TAD1,1	12	04023	W 03958 01001 1
1384		SUB-RTN 07.21				
1385	CQ	B8E	*E8,CN&11,M ^G	12	04035	W 04054 03969 M ^G
1386		B	DA	7	04047	J 04112
1387		B8E	CR,TAD0,1	12	04054	W 04080 01000 1
1388		B	TYPE	7	04066	J 01026
1389		DCW	@#07.21@,G	6	04078	
1390	CR	B8E	CS,TAD2,1	12	04080	W 04099 01002 1
1391		B	*E2	7	04092	J 04100
1392	CS	H		1	04099	.
1393		B8E	CQ,TAD1,1	12	04100	W 04035 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1395	ROUTINE 08.00		CHECK OPERATION OF BRANCH ZONE & BRANCH WM/ZONE			
1396						
1397	SUB-RTN 08.01					
1398	DA	BZN	DD,TPMK,	12	04112	V 04182 09903 2
1399		BBE	DB,TADO,1	12	04124	W 04150 01000 1
1400		B	TYPE	7	04136	J 01026
1401		DCW	2#08.012,G	6	04148	
1402	DB	BBE	DC,TAD2,1	12	04150	W 04169 01002 1
1403		B	*E2	7	04162	J 04170
1404	DC	H		1	04169	.
1405		BBE	DA,TAD1,1	12	04170	W 04112 01001 1
1406	SUB-RTN 08.02					
1407	DD	BZN	*E8,QUOT,	12	04182	V 04201 09897 2
1408		B	DG	7	04194	J 04259
1409		BBE	DE,TADO,1	12	04201	W 04227 01000 1
1410		B	TYPE	7	04213	J 01026
1411		DCW	2#08.022,G	6	04225	
1412	DE	BBE	DF,TAD2,1	12	04227	W 04246 01002 1
1413		B	*E2	7	04239	J 04247
1414	DF	H		1	04246	.
1415		BBE	DD,TAD1,1	12	04247	W 04182 01001 1
1416	SUB-RTN 08.03					
1417	DG	BZN	*E8,DELT,	12	04259	V 04278 09909 2
1418		B	DJ	7	04271	J 04336
1419		BBE	DH,TADO,1	12	04278	W 04304 01000 1
1420		B	TYPE	7	04290	J 01026
1421		DCW	2#08.032,G	6	04302	
1422	DH	BBE	DI,TAD2,1	12	04304	W 04323 01002 1
1423		B	*E2	7	04316	J 04324
1424	CI	H		1	04323	.
1425		BBE	DG,TAD1,1	12	04324	W 04259 01001 1
1426	SUB-RTN 08.04					
1427	CJ	BZN	*E8,GPMK,	12	04336	V 04355 09891 2
1428		B	DM	7	04348	J 04413
1429		BBE	DK,TADO,1	12	04355	W 04381 01000 1

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1430		B	TYPE	7	04367	J 01026
1431		DCW	a#08.04a,G	6	04379	
1432	DK	B8E	DL,TAD2,1	12	04381	W 04400 01002 1
1433		B	*E2	7	04393	J 04401
1434	DL	H		1	04400	.
1435		B8E	DJ,TAD1,1	12	04401	W 04336 01001 1
1436	SUB-RTN 08.05					
1437	DM	BZN	DP,QUOT,†	12	04413	V 04483 09897 S
1438		B8E	DN,TAD0,1	12	04425	W 04451 01000 1
1439		B	TYPE	7	04437	J 01026
1440		DCW	a#08.05a,G	6	04449	
1441	CN	B8E	DO,TAD2,1	12	04451	W 04470 01002 1
1442		B	*E2	7	04463	J 04471
1443	CO	H		1	04470	.
1444		B8E	DM,TAD1,1	12	04471	W 04413 01001 1
1445	SUB-RTN 08.06					
1446	CP	BZN	*E8,IPMK,†	12	04483	V 04502 09903 S
1447		B	DS	7	04495	J 04560
1448		B8E	DQ,TAD0,1	12	04502	W 04528 01000 1
1449		B	TYPE	7	04514	J 01026
1450		DCW	a#08.06a,G	6	04526	
1451	CQ	B8E	DR,TAD2,1	12	04528	W 04547 01002 1
1452		B	*E2	7	04540	J 04548
1453	CR	H		1	04547	.
1454		B8E	DP,TAD1,1	12	04548	W 04483 01001 1
1455	SUB-RTN 08.07					
1456	DS	BZN	*E8,DELT,†	12	04560	V 04579 09909 S
1457		B	DV	7	04572	J 04637
1458		B8E	DT,TAD0,1	12	04579	W 04605 01000 1
1459		B	TYPE	7	04591	J 01026
1460		DCW	a#08.07a,G	6	04603	
1461	CT	B8E	DU,TAD2,1	12	04605	W 04624 01002 1
1462		B	*E2	7	04617	J 04625
1463	CU	H		1	04624	.
1464		B8E	DS,TAD1,1	12	04625	W 04560 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1465	SUB-RTN 08.08					
1466	DV	BZN	*E8,GPMK,+	12	04637	V 04656 09891 S
1467		B	DY	7	04649	J 04714
1468		B8E	DW,TAD0,1	12	04656	W 04682 01000 1
1469		B	TYPE	7	04668	J 01026
1470		DCW	a#08.08a,G	6	04680	
1471	DW	B8E	DX,TAD2,1	12	04682	W 04701 01002 1
1472		B	*E2	7	04694	J 04702
1473	DX	H		1	04701	.
1474		B8E	DV,TAD1,1	12	04702	W 04637 01001 1
1475	SUB-RTN 08.09					
1476	DY	BZN	EB,DELT,-	12	04714	V 04784 09909 K
1477		B8E	DZ,TAD0,1	12	04726	W 04752 01000 1
1478		B	TYPE	7	04738	J 01026
1479		DCW	a#08.09a,G	6	04750	
1480	DZ	B8E	EA,TAD2,1	12	04752	W 04771 01002 1
1481		B	*E2	7	04764	J 04772
1482	EA	H		1	04771	.
1483		B8E	DY,TAD1,1	12	04772	W 04714 01001 1
1484	SUB-RTN 08.10					
1485	EB	BZN	*E8,TPMK,-	12	04784	V 04803 09903 K
1486		B	EE	7	04796	J 04861
1487		B8E	EC,TAD0,1	12	04803	W 04829 01000 1
1488		B	TYPE	7	04815	J 01026
1489		DCW	a#08.10a,G	6	04827	
1490	EC	B8E	ED,TAD2,1	12	04829	W 04848 01002 1
1491		B	*E2	7	04841	J 04849
1492	ED	H		1	04848	.
1493		B8E	EB,TAD1,1	12	04849	W 04784 01001 1
1494	SUB-RTN 08.11					
1495	EE	BZN	*E8,QUOT,-	12	04861	V 04880 09897 K
1496		B	EH	7	04873	J 04938
1497		B8E	EF,TAD0,1	12	04880	W 04906 01000 1
1498		B	TYPE	7	04892	J 01026
1499		DCW	a#08.11a,G	6	04904	

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1500	EF	BBE	EG,TAD2,1	12	04906	W 04925 01002 1
1501		B	*£2	7	04918	J 04926
1502	EG	H		1	04925	.
1503		BBE	EE,TAD1,1	12	04926	W 04861 01001 1
1504	SUB-RTN 08.12					
1505	EH	BZN	*£8,GPMK,-	12	04938	V 04957 09891 K
1506		B	EK	7	04950	J 05015
1507		BBE	EI,TAD0,1	12	04957	W 04983 01000 1
1508		B	TYPE	7	04969	J 01026
1509		DCW	2#08.122,G	6	04981	
1510	EI	BBE	EJ,TAD2,1	12	04983	W 05002 01002 1
1511		B	*£2	7	04995	J 05003
1512	EJ	H		1	05002	.
1513		BBE	EH,TAD1,1	12	05003	W 04938 01001 1
1514	SUB-RTN 08.13					
1515	EK	BZN	EN,GPMK,£	12	05015	V 05085 09891 B
1516		BBE	EL,TAD0,1	12	05027	W 05053 01000 1
1517		B	TYPE	7	05039	J 01026
1518		DCW	2#08.132,G	6	05051	
1519	EL	BBE	EM,TAD2,1	12	05053	W 05072 01002 1
1520		B	*£2	7	05065	J 05073
1521	EM	H		1	05072	.
1522		BBE	EK,TAD1,1	12	05073	W 05015 01001 1
1523	SUB-RTN 08.14					
1524	EN	BZN	*£8,TPMK,£	12	05085	V 05104 09903 B
1525		B	EQ	7	05097	J 05162
1526		BBE	EO,TAD0,1	12	05104	W 05130 01000 1
1527		B	TYPE	7	05116	J 01026
1528		DCW	2#08.142,G	6	05128	
1529	EO	BBE	EP,TAD2,1	12	05130	W 05149 01002 1
1530		B	*£2	7	05142	J 05150
1531	EP	H		1	05149	.
1532		BBE	EN,TAD1,1	12	05150	W 05085 01001 1
1533	SUB-RTN 08.15					
1534	EQ	BZN	*£8,QUOT,£	12	05162	V 05181 09897 B

SHOULD NOT BRANCH

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1535		B	ET	7	05174	J 05239
1536		B8E	ER,TAD0,1	12	05181	W 05207 01000 1
1537		B	TYPE	7	05193	J 01026
1538		DCW	a#08.15a,G	6	05205	
1539	ER	B8E	ES,TAD2,1	12	05207	W 05226 01002 1
1540		B	*a2	7	05219	J 05227
1541	ES	H		1	05226	.
1542		B8E	EQ,TAD1,1	12	05227	W 05162 01001 1
1543	SUB-RTN 08.16					
1544	ET	BZN	*a8,DELT,a	12	05239	V 05258 09909 8
1545		B	EW	7	05251	J 05316
1546		B8E	EU,TAD0,1	12	05258	W 05284 01000 1
1547		B	TYPE	7	05270	J 01026
1548		DCW	a#08.16a,G	6	05282	
1549	EU	B8E	EV,TAD2,1	12	05284	W 05303 01002 1
1550		B	*a2	7	05296	J 05304
1551	EV	H		1	05303	.
1552		B8E	ET,TAD1,1	12	05304	W 05239 01001 1
1553	SUB-RTN 08.17					
1554	EW	BWZ	*a8,GPMK,	12	05316	V 05335 09891 3
1555		B	EZ	7	05328	J 05393
1556		B8E	EX,TAD0,1	12	05335	W 05361 01000 1
1557		B	TYPE	7	05347	J 01026
1558		DCW	a#08.17a,G	6	05359	
1559	EX	B8E	EY,TAD2,1	12	05361	W 05380 01002 1
1560		B	*a2	7	05373	J 05381
1561	EY	H		1	05380	.
1562		B8E	EW,TAD1,1	12	05381	W 05316 01001 1
1563	SUB-RTN 08.18 USE ILLEGAL OP MODIFIER TO TEST NO-BRANCH COND					
1564	EZ	BWZ		1	05393	V
1565		DC	EZ1	5	05398	05412
1566			GMWM	5	05403	01219
1567			aqa	1	05404	
1568		B	FC	7	05405	J 05470
1569	EZ1	B8E	FA,TAD0,1	12	05412	W 05438 01000 1

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1570		B	TYPE	7	05424	J 01026
1571		DCW	@#C8.18a,G	6	05436	
1572	FA	BBE	FB,TAD2,1	12	05438	W 05457 01002 1
1573		H	*E2	7	05450	J 05458
1574	FB	H		1	05457	.
1575		BBE	EZ,TAD1,1	12	05458	W 05393 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1577	ROUTINE 09.00	CK	INSTRUCTIONS ZERO-ADD, ZERO-SUBTRACT, BR ZERO			
1578						
1579	SUB-RTN 09.01					
1580	FC	ZA	QMARK, WORK1	11	05470	Q 05564 09868
1581		ZA	£8, WORK1	11	05481	Q 09924 09868
1582		BZ	*£8	7	05492	J 05506 V
1583		B	QMARK	7	05499	J 05564
1584		BBE	FD, TAD0, 1	12	05506	W 05532 01000 1
1585		B	TYPE	7	05518	J 01026
1586		DCW	@09.01@, G	6	05530	
1587	FD	BBE	FE, TAD2, 1	12	05532	W 05551 01002 1
1588		B	*£2	7	05544	J 05552
1589	FE	H		1	05551	.
1590		BBE	FC, TAD1, 1	12	05552	W 05470 01001 1
1591	SUB-RTN 09.02					
1592	QMARK	ZA	QMARK, WORK1	11	05564	Q 05564 09868
1593		ZA	£8, WORK2	11	05575	Q 09924 09869
1594		ZA	WORK1, WORK2	11	05586	Q 09868 09869
1595		BZ	FH	7	05597	J 05662 V
1596		BBE	FF, TAD0, 1	12	05604	W 05630 01000 1
1597		B	TYPE	7	05616	J 01026
1598		DCW	@09.02@, G	6	05628	
1599	FF	BBE	FG, TAD2, 1	12	05630	W 05649 01002 1
1600		B	*£2	7	05642	J 05650
1601	FG	H		1	05649	.
1602		BBE	QMARK, TAD1, 1	12	05650	W 05564 01001 1
1603	SUB-RTN 09.03		CK ZERO-ADD FOR PROPER ZONE GENERATION			
1604	FH	ZA	-8, WORK2	11	05662	Q 09925 09869
1605		ZA	£8, WORK2	11	05673	Q 09924 09869
1606		BZN	FK, WORK2, £	12	05684	V 05754 09869 B
1607		BBE	FI, TAD0, 1	12	05696	W 05722 01000 1
1608		B	TYPE	7	05708	J 01026
1609		DCW	@09.03@, G	6	05720	
1610	FI	BBE	FJ, TAD2, 1	12	05722	W 05741 01002 1
1611		B	*£2	7	05734	J 05742

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1612	FJ	H		1	05741	.
1613		BBE	FH,TAD1,1	12	05742	W 05662 01001 1
1614	SUB-RTN 09.04					
1615	FK	ZA	-8,WORK2	11	05754	Q M 09925 09869
1616		BZN	FN,WORK2,-	12	05765	V 05835 09869 K
1617		BBE	FL,TAD0,1	12	05777	W 05803 01000 1
1618		B	TYPE	7	05789	J 01026
1619		DCW	a#09.04a,G	6	05801	
1620	FL	BBE	FM,TAD2,1	12	05803	W 05822 01002 1
1621		B	*E2	7	05815	J 05823
1622	FM	H		1	05822	.
1623		BBE	FK,TAD1,1	12	05823	W 05754 01001 1
1624	SUB-RTN 09.05					
1625	FN	ZA	aY2,WORK2	11	05835	Q M 09926 09869
1626		BZN	FQ,WORK2,E	12	05846	V 05916 09869 B
1627		BBE	FO,TAD0,1	12	05858	W 05884 01000 1
1628		B	TYPE	7	05870	J 01026
1629		DCW	a#09.05a,G	6	05882	
1630	FO	BBE	FP,TAD2,1	12	05884	W 05903 01002 1
1631		B	*E2	7	05896	J 05904
1632	FP	H		1	05903	.
1633		BBE	FN,TAD1,1	12	05904	W 05835 01001 1
1634	SUB-RTN 09.06					
1635	FQ	ZA	-8,WORK2	11	05916	Q M 09925 09869
1636		ZA	a8a,WORK2	11	05927	Q M 09927 09869
1637		BZN	FT,WORK2,E	12	05938	V 06008 09869 B
1638		BBE	FR,TAD0,1	12	05950	W 05976 01000 1
1639		B	TYPE	7	05962	J 01026
1640		DCW	a#09.06a,G	6	05974	
1641	FR	BBE	FS,TAD2,1	12	05976	W 05995 01002 1
1642		B	*E2	7	05988	J 05996
1643	FS	H		1	05995	.
1644		BBE	FQ,TAD1,1	12	05996	W 05916 01001 1
1645	SUB-RTN 09.07		CHECK ZERO-SUBTRACT FOR PROPER ZONE GENERATION			
1646	FT	ZS	E8,WORK2	11	06008	. 09924 09869

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1647		BZN	FW,WORK2,-	12	06019	V 06089 09869 K
1648		B8E	FU,TAD0,1	12	06031	W 06057 01000 1
1649		B	TYPE	7	06043	J 01026
1650		DCW	a#09.07a,G	6	06055	
1651	FU	B8E	FV,TAD2,1	12	06057	W 06076 01002 1
1652		B	*E2	7	06069	J 06077
1653	FV	H		1	06076	.
1654		B8E	FT,TAD1,1	12	06077	W 06008 01001 1
1655	SUB-RTN 09.08					
1656	FW	ZS	-8,WORK2	11	06089	. 09925 09869
1657		BZN	FZ,WORK2,E	12	06100	V 06170 09869 B
1658		B8E	FX,TAD0,1	12	06112	W 06138 01000 1
1659		B	TYPE	7	06124	J 01026
1660		DCW	a#09.08a,G	6	06136	
1661	FX	B8E	FY,TAD2,1	12	06138	W 06157 01002 1
1662		B	*E2	7	06150	J 06158
1663	FY	H		1	06157	.
1664		B8E	FW,TAD1,1	12	06158	W 06089 01001 1
1665	SUB-RTN 09.09					
1666	FZ	ZS	aYa,WORK2	11	06170	. 09926 09869
1667		BZN	GC,WORK2,-	12	06181	V 06251 09869 K
1668		B8E	GA,TAD0,1	12	06193	W 06219 01000 1
1669		B	TYPE	7	06205	J 01026
1670		DCW	a#09.09a,G	6	06217	
1671	GA	B8E	GB,TAD2,1	12	06219	W 06238 01002 1
1672		B	*E2	7	06231	J 06239
1673	GB	H		1	06238	.
1674		B8E	FZ,TAD1,1	12	06239	W 06170 01001 1
1675	SUB-RTN 09.10					
1676	GC	ZS	-8,WORK2	11	06251	. 09925 09869
1677		ZS	a8a,WORK2	11	06262	. 09927 09869
1678		BZN	GF,WORK2,-	12	06273	V 06343 09869 K
1679		B8E	GD,TAD0,1	12	06285	W 06311 01000 1
1680		B	TYPE	7	06297	J 01026
1681		DCW	a#09.10a,G	6	06309	

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1682	GD	B8E	GE,TAD2,1	12	06311	W 06330 01002 1
1683		B	*£2	7	06323	J 06331
1684	GE	H		1	06330	.
1685		B8E	GC,TAD1,1	12	06331	W 06251 01001 1
1686	SUB-RTN 09.11 CK FOR HI-ORDER ZONE ELIMINATION					
1687	GF	ZA	£8,WORK3-1	11	06343	Q 09924 09870
1688		ZA	WORK3-1,WORK3	11	06354	Q 09870 09871
1689		BZN	GI,WORK3-1,	12	06365	V 06435 09870 2
1690		B8E	GG,TAD0,1	12	06377	W 06403 01000 1
1691		B	TYPE	7	06389	J 01026
1692		CCW	£#C9.11£,G	6	06401	
1693	GG	B8E	GH,TAD2,1	12	06403	W 06422 01002 1
1694		B	*£2	7	06415	J 06423
1695	GH	H		1	06422	.
1696		B8E	GF,TAD1,1	12	06423	W 06343 01001 1
1697	SUB-RTN 09.12 CK FOR HI-ORDER ZERO GENERATION					
1698	GI	ZS	£8,WORK3-1	11	06435	. 09924 09870
1699		ZS	WORK3-1,WORK3	11	06446	. 09870 09871
1700		ZS	WORK3-1	6	06457	. 09870
1701		BZ	GL	7	06463	J 06528 V
1702		B8E	GJ,TAD0,1	12	06470	W 06496 01000 1
1703		B	TYPE	7	06482	J 01026
1704		CCW	£#09.12£,G	6	06494	
1705	GJ	B8E	GK,TAD2,1	12	06496	W 06515 01002 1
1706		B	*£2	7	06508	J 06516
1707	GK	H		1	06515	.
1708		B8E	GI,TAD1,1	12	06516	W 06435 01001 1
1709	SUB-RTN 09.13 CK ZERO-ADD & ZERO-SUBTRACT, SINGLE NUMERIC BIT					
1710	GL	ZA	£6,WORK2	11	06528	Q 09928 09869
1711		ZA	-1,WORK2	11	06539	Q 09929 09869
1712		B8E	GM,WORK2,S	12	06550	W 06574 09869 S
1713		B8E	GP,WORK2,1	12	06562	W 06632 09869 1
1714	GM	B8E	GN,TAD0,1	12	06574	W 06600 01000 1
1715		B	TYPE	7	06586	J 01026
1716		CCW	£#C9.13£,G	6	06598	

SHOULD BRANCH, ZONE ELIMINATED

SINGLE-FIELD ARITH TEST FOR ZERO

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1717	GN	BBE	GO,TAD2,1	12	06600	W 06619 01002 1
1718		B	*E2	7	06612	J 06620
1719	GO	H		1	06619	.
1720		BBE	GL,TAD1,1	12	06620	W 06528 01001 1
1721	SUB-RTN 09.14					
1722	GP	ZS	-9,WORK2	11	06632	. 09930 09869
1723		ZS	E2,WORK2	11	06643	. 09931 09869
1724		BBE	GQ,WORK2,S	12	06654	W 06678 09869 S
1725		BBE	GT,WORK2,2	12	06666	W 06736 09869 2
1726	GQ	BBE	GR,TADO,1	12	06678	W 06704 01000 1
1727		B	TYPE	7	06690	J 01026
1728		DCW	#09.142,G	6	06702	
1729	GR	BBE	GS,TAD2,1	12	06704	W 06723 01002 1
1730		B	*E2	7	06716	J 06724
1731	GS	H		1	06723	.
1732		BBE	GP,TAD1,1	12	06724	W 06632 01001 1
1733	SUB-RTN 09.15					
1734	GT	ZA	E9,WORK2	11	06736	Q 09932 09869
1735		ZS	E4,WORK2	11	06747	. 09933 09869
1736		BBE	GU,WORK2,,	12	06758	W 06782 09869 ,
1737		BBE	GX,WORK2,4	12	06770	W 06840 09869 4
1738	GU	BBE	GV,TADO,1	12	06782	W 06808 01000 1
1739		B	TYPE	7	06794	J 01026
1740		DCW	#09.152,G	6	06806	
1741	GV	BBE	GW,TAD2,1	12	06808	W 06827 01002 1
1742		B	*E2	7	06820	J 06828
1743	GW	H		1	06827	.
1744		BBE	GI,TAD1,1	12	06828	W 06736 01001 1
1745	SUB-RTN 09.16					
1746	GX	ZS	-6,WORK2	11	06840	. 09934 09869
1747		ZA	-8,WORK2	11	06851	Q 09925 09869
1748		BBE	GY,WORK2,X	12	06862	W 06886 09869 X
1749		BBE	HB,WORK2,8	12	06874	W 06944 09869 8
1750	GY	BBE	GZ,TADO,1	12	06886	W 06912 01000 1
1751		B	TYPE	7	06898	J 01026

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1752		DCW	a#C9.16a,G	6	06910	
1753	GZ	BBE	HA,TAD2,1	12	06912	W 06931 01002 1
1754		B	*E2	7	06924	J 06932
1755	HA	H		1	06931	.
1756		BBE	GX,TAD1,1	12	06932	W 06840 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1758						
1759						
1760						
1761						
1762						
1763						
1764						
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ROUTINE	10.00	CHECK OPERATIONS	ADD AND SUBTRACT
SUB-RTN	10.01	ADD ZERO TO ZERO	
HB	ZA	HB,WORK2	
	A	HB,WORK2	
	BZ	HC	SHOULD BRANCH
	BBE	*£15,TAD0,1	
	B	TYPE	
	DCW	@#10.01a,G	
	BBE	*£8,TAD2,1	
	B	*£2	
	H		
	BBE	HB,TAD1,1	
SUB-RTN	10.02	ADD PLUS 1 TO MINUS 1	
HC	ZS	£1,WORK2	
	A	£1,WORK2	
	BZ	HD	SHOULD BRANCH
	BBE	*£15,TAD0,1	
	B	TYPE	
	DCW	@#10.02a,G	
	BBE	*£8,TAD2,1	
	B	*£2	
	H		
	BBE	HC,TAD1,1	
SUB-RTN	10.03	ADD MINUS 2 TO PLUS 2	
HD	ZS	-2,WORK2	
	A	-2,WORK2	
	BZ	HE	SHOULD BRANCH
	BBE	*£15,TAD0,1	
	B	TYPE	
	DCW	@#10.03a,G	
	BBE	*£8,TAD2,1	
	B	*£2	
	H		

CT	ADDRS	INSTRUCTION
11	06944	Q M 06944 09869
11	06955	A 06944 09869
7	06966	J 07031 V
12	06973	W 06999 01000 1
7	06985	J 01026
6	06997	
12	06999	W 07018 01002 1
7	07011	J 07019
1	07018	.
12	07019	W 06944 01001 1
11	07031	. 09935 09869
11	07042	A 09935 09869
7	07053	J 07118 V
12	07060	W 07086 01000 1
7	07072	J 01026
6	07084	
12	07086	W 07105 01002 1
7	07098	J 07106
1	07105	.
12	07106	W 07031 01001 1
11	07118	. 09936 09869
11	07129	A 09936 09869
7	07140	J 07205 V
12	07147	W 07173 01000 1
7	07159	J 01026
6	07171	
12	07173	W 07192 01002 1
7	07185	J 07193
1	07192	.

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1793		BBE	HD,TAD1,1	12	07193	W 07118 01001 1
1794	SUB-RTN 10.04		ADC PLUS 4 TO MINUS 4			
1795	HE	ZA	-4,WORK2	11	07205	Q M 09937 09869
1796		A	£4,WORK2	11	07216	A 09933 09869
1797		BZ	HF	7	07227	J 07292 V
1798		BBE	*£15,TAD0,1	12	07234	W 07260 01000 1
1799		B	TYPE	7	07246	J 01026
1800		DCW	£#10.04£,G	6	07258	
1801		BBE	*£8,TAD2,1	12	07260	W 07279 01002 1
1802		B	*£2	7	07272	J 07280
1803		H		1	07279	.
1804		BBE	HE,TAD1,1	12	07280	W 07205 01001 1
1805	SUB-RTN 10.05		ADC MINUS 8 TO PLUS 8			
1806	HF	ZA	£8,WORK2	11	07292	Q M 09924 09869
1807		A	-8,WORK2	11	07303	A 09925 09869
1808		BZ	HG	7	07314	J 07379 V
1809		BBE	*£15,TAD0,1	12	07321	W 07347 01000 1
1810		B	TYPE	7	07333	J 01026
1811		DCW	£#10.05£,G	6	07345	
1812		BBE	*£8,TAD2,1	12	07347	W 07366 01002 1
1813		B	*£2	7	07359	J 07367
1814		H		1	07366	.
1815		BBE	HF,TAD1,1	12	07367	W 07292 01001 1
1816	SUB-RTN 10.06		SUBTRACT PLUS 1 FROM PLUS 1			
1817	HG	ZA	£1,WORK2	11	07379	Q M 09935 09869
1818		S	£1,WORK2	11	07390	S 09935 09869
1819		BZ	HH	7	07401	J 07466 V
1820		BBE	*£15,TAD0,1	12	07408	W 07434 01000 1
1821		B	TYPE	7	07420	J 01026
1822		DCW	£#10.06£,G	6	07432	
1823		BBE	*£8,TAD2,1	12	07434	W 07453 01002 1
1824		B	*£2	7	07446	J 07454
1825		H		1	07453	.
1826		BBE	HG,TAD1,1	12	07454	W 07379 01001 1
1827	SUB-RTN 10.07		SUBTRACT MINUS 2 FROM MINUS 2			

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1828	HH	ZS	£2,WORK2	11	07466	09931 09869
1829		S	-2,WORK2	11	07477	S 09936 09869
1830		BZ	HI	7	07488	J 07553 V
1831		BBE	*£15,TAD0,1	12	07495	W 07521 01000 1
1832		B	TYPE	7	07507	J 01026
1833		DCW	2#10.072,G	6	07519	
1834		BBE	*£8,TAD2,1	12	07521	W 07540 01002 1
1835		B	*£2	7	07533	J 07541
1836		H		1	07540	.
1837		BBE	HH,TAD1,1	12	07541	W 07466 01001 1
1838	SUB-RTN 10.08		SUBTRACT PLUS 4 FROM PLUS 4			
1839	HI	ZS	-4,WORK2	11	07553	09937 09869
1840		S	£4,WORK2	11	07564	S 09933 09869
1841		BZ	HJ	7	07575	J 07640 V
1842		BBE	*£15,TAD0,1	12	07582	W 07608 01000 1
1843		B	TYPE	7	07594	J 01026
1844		DCW	2#10.082,G	6	07606	
1845		BBE	*£8,TAD2,1	12	07608	W 07627 01002 1
1846		B	*£2	7	07620	J 07628
1847		H		1	07627	.
1848		BBE	HI,TAD1,1	12	07628	W 07553 01001 1
1849	SUB-RTN 10.09		SUBTRACT MINUS 8 FROM MINUS 8			
1850	HJ	ZA	-8,WORK2	11	07640	Q M 09925 09869
1851		S	-8,WORK2	11	07651	S 09925 09869
1852		BZ	HK	7	07662	J 07727 V
1853		BBE	*£15,TAD0,1	12	07669	W 07695 01000 1
1854		B	TYPE	7	07681	J 01026
1855		DCW	2#10.092,G	6	07693	
1856		BBE	*£8,TAD2,1	12	07695	W 07714 01002 1
1857		B	*£2	7	07707	J 07715
1858		H		1	07714	.
1859		BBE	HJ,TAD1,1	12	07715	W 07640 01001 1
1860	SUB-RTN 10.10		CK ARITH OFLOW AND ZERO BALANCE			
1861	HK	BAV	*£1	7	07727	J 07734 Z
1862		ZA	£5,WORK2	11	07734	Q M 09938 09869

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1863		A	WORK2	6	07745	A 09869
1864		BZ	*£8	7	07751	J 07765 V
1865		B	HL	7	07758	J 07793
1866		BAV	*£8	7	07765	J 07779 Z
1867		B	HL	7	07772	J 07793
1868		BAV	*£8	7	07779	J 07793 Z
1869		B	HM	7	07786	J 07851
1870	HL	B8E	*£15,TAD0,1	12	07793	W 07819 01000 1
1871		B	TYPE	7	07805	J 01026
1872		DCW	@#10.10@,G	6	07817	
1873		B8E	*£8,TAD2,1	12	07819	W 07838 01002 1
1874		B	*£2	7	07831	J 07839
1875		H		1	07838	.
1876		B8E	HK,TAD1,1	12	07839	W 07727 01001 1
1877	SUB-RTN 10.11		CK ARITH OFLOW & NO ZERO BAL & NO DIGIT OFLOW			
1878	HM	BAV	*£1	7	07851	J 07858 Z
1879		ZS	*-10,WORK1	11	07858	: 07858 09868
1880		ZS	£9,WORK2	11	07869	: 09932 09869
1881		S	£9,WORK2	11	07880	S 09932 09869
1882		BAV	*£8	7	07891	J 07905 Z
1883		B	HN	7	07898	J 07925
1884		BZ	HN	7	07905	J 07925 V
1885		ZA	WORK1	6	07912	Q M 09868
1886		BZ	HO	7	07918	J 07983 V
1887	HN	B8E	*£15,TAD0,1	12	07925	W 07951 01000 1
1888		B	TYPE	7	07937	J 01026
1889		DCW	@#10.11@,G	6	07949	
1890		B8E	*£8,TAD2,1	12	07951	W 07970 01002 1
1891		B	*£2	7	07963	J 07971
1892		H		1	07970	.
1893		B8E	HM,TAD1,1	12	07971	W 07851 01001 1
1894	SUB-RTN 10.12		LONG ADD & SUBTRACT USING ALL DIGITS			
1895	HO	ZS	£54321,WORK4-5	11	07983	: 09943 09876
1896		ZS	WORK4-5,WORK4	11	07994	: 09876 09881
1897		A	£9876,WORK4-5	11	08005	A 09947 09876

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1898		A	£123,WORK4-5	11	08016	A 09950 09876
1899		A	£45679,WORK4	11	08027	A 09955 09881
1900		BZ	HP	7	08038	J 08147 V
1901		SW	WORK4-8	6	08045	, 09873
1902		ZS	WORK4	6	08051	, 09881
1903		CW	WORK4-8	6	08057	□ 09873
1904		BZ	*£8	7	08063	J 08077 V
1905		B	HP	7	08070	J 08147
1906		S	£123,WORK4-5	11	08077	S 09950 09876
1907		S	-45679,WORK4	11	08088	S 09960 09881
1908		S	£9876,WORK4-5	11	08099	S 09947 09876
1909		S	-54321,WORK4	11	08110	S 09965 09881
1910		BZ	*£8	7	08121	J 08135 V
1911		B	HP	7	08128	J 08147
1912		BZN	HQ,WORK4,-	12	08135	V 08205 09881 K
1913	HP	BBE	*£15,TAD0,1	12	08147	W 08173 01000 I
1914		B	TYPE	7	08159	J 01026
1915		DCW	@#10.12@,6	6	08171	
1916		BBE	*£8,TAD2,1	12	08173	W 08192 01002 I
1917		B	*£2	7	08185	J 08193
1918		H		1	08192	.
1919		BBE	H0,IAD1,1	12	08193	W 07983 01001 I
1920	SUB-RTN 10.13		CK B-FIELD ZONE RETENTION & SIGN CHANGE			
1921	HQ	SW	WORK5	6	08205	, 09885
1922		ZA	-1,WORK5	11	08211	M 09929 09885
1923		CW	WORK5	6	08222	□ 09885
1924		S	WORK5	6	08228	S 09885
1925		BZN	*£8,WORK5,-	12	08234	V 08253 09885 K
1926		B	HR	7	08246	J 08420
1927		BZN	*£8,WORK5-1,†	12	08253	V 08272 09884 S
1928		B	HR	7	08265	J 08420
1929		BZN	*£8,WORK5-2,	12	08272	V 08291 09883 2
1930		B	HR	7	08284	J 08420
1931		BZN	*£8,WORK5-3,£	12	08291	V 08310 09882 B
1932		B	HR	7	08303	J 08420

WORK4 SHOULD BE 099995432A NOW
WORK4 SHOULD BE 100000000£ NOW
SHOULD NOT BRANCH
TEST LOWER 9 POS OF WORK4 FOR ZRO
SHOULD BRANCH
WORK4 SHOULD BE 098770000- NOW
WORK4 SHOULD BE 098765432J NOW
WORK4 SHOULD BE 000005432J NOW
WORK4 SHOULD BE 000000000- NOW
SHOULD BRANCH
WILL BRANCH IF ZONED CORRECTLY
** ANY #10.12 ERROR COMES HERE
PROTECT HI-ORDER FIELD OF WORK5
INSURE ZONED NEGATIVELY
REMOVE WM
ZERO OUT WORK5 FIELD
. INSURE
. THAT
. ZONES
. ARE
. RETAINED
. FOLLOWING
. SINGLE-FIELD
. SUBTRACT

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1933		A	29RIY2,WORK5	11	08310	A 09969 09885
1934		BZN	*E8,WORK5,E	12	08321	V 08340 09885 B
1935		B	HR	7	08333	J 08420
1936		BZN	*E8,WORK5-1,†	12	08340	V 08359 09884 S
1937		B	HR	7	08352	J 08420
1938		BZN	*E8,WORK5-2,	12	08359	V 08378 09883 2
1939		B	HR	7	08371	J 08420
1940		BZN	*E8,WORK5-3,E	12	08378	V 08397 09882 B
1941		B	HR	7	08390	J 08420
1942		S	FOUR9S,WORK5	11	08397	S 09913 09885
1943		BZN	HS,WORK5,-	12	08408	V 08478 09885 K
1944	HR	BBE	*E15,TAD0,1	12	08420	W 08446 01000 1
1945		B	TYPE	7	08432	J 01026
1946		DCW	2#10.132,G	6	08444	
1947		BBE	*E8,TAD2,1	12	08446	W 08465 01002 1
1948		B	*E2	7	08458	J 08466
1949		H		1	08465	.
1950		BBE	HQ,TAD1,1	12	08466	W 08205 01001 1
1951	SUB-RTN 10.14		ARITHMETIC OPERATIONS ON SPECIAL CHARACTERS			
1952	HS	ZA	HS,WORK4	11	08478	Q M 08478 09881
1953		A	SPECL1,WORK4-1	11	08489	A 09891 09880
1954		BBE	HT,WORK4-1,H	12	08500	W 08662 09880 H
1955		BBE	HT,WORK4-2,I	12	08512	W 08662 09879 I
1956		BBE	HT,WORK4-3,M	12	08524	W 08662 09878 M
1957		BBE	HT,WORK4-4,.	12	08536	W 08662 09877 .
1958		BBE	HT,WORK4-5,□	12	08548	W 08662 09876 □
1959		BBE	HT,WORK4-6,E	12	08560	W 08662 09875 E
1960		S	E34567,WORK4-1	11	08572	S 09974 09880
1961		BZ	*E8	7	08583	J 08597 V
1962		B	HT	7	08590	J 08662
1963		ZA	SPECL2,WORK4	11	08597	Q M 09897 09881
1964		A	-34567,WORK4	11	08608	A 09979 09881
1965		RZ	*E8	7	08619	J 08633 V
1966		B	HT	7	08626	J 08662
1967		ZS	SPECL3,WORK4	11	08633	. 09903 09881

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1968		S	SPECL4,WORK4	11	08644	S 09909 09881
1969		BZ	HU	7	08655	J 08720 V
1970	HT	BHE	*E15,TAD0,1	12	08662	W 08688 01000 1
1971		B	TYPE	7	08674	J 01026
1972		DCW	a#10.14a,G	6	08686	
1973		BHE	*E8,TAD2,1	12	08688	W 08707 01002 1
1974		B	*E2	7	08700	J 08708
1975		H		1	08707	.
1976		BHE	HS,TAD1,1	12	08708	W 08478 01001 1
1977		SUB-RTN 10.15 ARITH OPS WHEREIN A-FLD LENGTH EXCEEDS B-FLD				
1978	HU	ZA	FOUR9S,WORK3	11	08720	Q M 09913 09871
1979		SAR	HOLDAL	7	08731	G 01020 A
1980		SBR	HOLDB1	7	08738	G 01025 B
1981		S	ALFADD,HOLCAL	11	08745	S 09918 01020
1982		BZ	*E8	7	08756	J 08770 V
1983		B	HV	7	08763	J 08877
1984		S	BETADD,HOLDB1	11	08770	S 09923 01025
1985		BZ	*E8	7	08781	J 08795 V
1986		B	HV	7	08788	J 08877
1987		S	FOUR9S,WORK3	11	08795	S 09913 09871
1988		SAR	HOLDAL	7	08806	G 01020 A
1989		SBR	HOLDB1	7	08813	G 01025 B
1990		BZ	*E8	7	08820	J 08834 V
1991		B	HV	7	08827	J 08877
1992		S	ALFADD,HOLCAL	11	08834	S 09918 01020
1993		BZ	*E8	7	08845	J 08859 V
1994		B	HV	7	08852	J 08877
1995		S	BETADD,HOLDB1	11	08859	S 09923 01025
1996		BZ	HVA	7	08870	J 08903 V
1997	HV	B	TYPCK	7	08877	J 01071
1998		DCW	a#10.15a,G	6	08889	
1999		BHE	HU,TAD1,1	12	08891	W 08720 01001 1
2000		SUB-RTN 10.16 TEST THAT ONLY ZERO TURNS ON ZERO BALANCE				
2001	FVA	BAV	*E1	7	08903	J 08910 Z
2002		ZA	E18,WORK3	11	08910	Q M 09981 09871

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2003		ZA	£1C,WORK4-8	11	08921	Q M 09983 09873
2004	HVB	A	£9,WORK3	11	08932	A 09932 09871
2005		S	£1,WORK4-8	11	08943	S 09935 09873
2006		BZ	*£15	7	08954	J 08975 V
2007		BAV	*£15	7	08961	J 08982 Z
2008		B	HVB	7	08968	J 08932
2009		BAV	HV1	7	08975	J 09008 Z
2010		B	TYPCK	7	08982	J 01071
2011		DCW	@#10.16@,G	6	08994	
2012		BBE	HVA,TAD1,1	12	08996	W 08903 01001 1
2013	SUB-RTN 10.17		ADJUST ROUTINE #11.01 FOR INDICATED STORAGE SIZE			
2014	HV1	CW	HW1£1	6	09008	£ 09103
2015		ZA	MEMSIZ,WORK1	11	09014	Q M 01257 09868
2016		BZ	*£7	7	09025	J 09038 V
2017		SW	HW1£1	6	09032	, 09103

27,36,45,54,63,72,81,90,99,08 OFL
 09,08,07,06,05,04,03,02,01,00 ZRO
 SHOULD BRANCH AFTER 10 REDUCTIONS
 SHOULD NEVER BRANCH HERE
 SHOULD BRANCH & EXIT ROUTINE HERE

ASSUME 10K STORAGE CAPACITY
 TEST FOR 10K STORAGE CAPACITY
 BRANCH IF CTL CARD INDICATES 10K
 SET #11.01 FOR NOT 10K CAPACITY

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2019		ROUTINE 11.00	CHECK OPERATION CLEAR STORAGE			
2020						
2021		SUB-RTN 11.01	CK CS 0000C FOR NO ERR & PROPER SETTINGS AAR, BAR			
2022	HW	CS	0	6	09038	/ 00000
2023		SAR	WORK4-5	7	09044	G 09876 A
2024		SBR	HOLDB1	7	09051	G 01025 B
2025		ZA	WORK4-5	6	09058	M 09876
2026		BZ	*E8	7	09064	J 09078 V
2027		B	HX	7	09071	J 09132
2028		BBE	HW1, MEMSIZ, M ^G	12	09078	W 09102 01257 M ^G
2029		BW	HY, 997	12	09090	V 09158 00997 1
2030	HW1	NOPWM		1	09102	N
2031		S	FOUR9S-3, HOLDB1-4 DO THIS IF STOR SIZE EXCEEDS 10K	11	09103	S 09910 01021
2032		S	FOUR9S, HOLCB1 DO THIS FOR ANY SIZE STORAGE	11	09114	S 09913 01025
2033		BZ	HY	7	09125	J 09158 V
2034	HX	B	TYPCK	7	09132	J 01071
2035		DCW	@11.012, G	6	09144	
2036		BBE	HW, TAD1, 1	12	09146	W 09038 01001 1
2037		SUB-RTN 11.02	CHECK PROPER OPERATION CLEAR STORAGE			
2038	HY	CW	30C	6	09158	□ 00300
2039		SAR	HZE10	7	09164	G 09314 A
2040		SW	201, 251	11	09171	, 00201 00251
2041		CS	299	6	09182	/ 00299
2042		BW	JA, 251	12	09188	V 09353 00251 1
2043		BW	JA, 201	12	09200	V 09353 00201 1
2044		SW	200, 301	11	09212	, 00200 00301
2045		ZA	E7, 200	11	09223	M 09984 00200
2046		ZA	E8, 301	11	09234	M 09924 00301
2047		CW	301, 300	11	09245	□ 00301 00300
2048		ZA	301, 300	11	09256	M 00301 00300
2049		BBE	JA, 200, G	12	09267	W 09353 00200 G
2050		BBE	*E8, 200, 8	12	09279	W 09298 00200 8
2051		B	JA	7	09291	J 09353
2052		CS	299	6	09298	/ 00299
2053	HZ	BBE	JA, 299, M ^G	12	09304	W 09353 00299 M ^G

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2054		BZ	JB	7	09316	J 09379 V
2055		SW	HZE9	6	09323	, 09313
2056		S	E1,HZE10	11	09329	S 09935 09314
2057		CW	HZE9	6	09340	0 09313
2058		B	HZ	7	09346	J 09304
2059	JA	B	TYPCK	7	09353	J 01071
2060		DCW	a#11.02a,G	6	09365	
2061		BBE	HY,TAD1,1	12	09367	W 09158 01001 1
2062		SUB-RTN 11.03 CHECK CLEAR STORAGE & BRANCH				
2063	JB	SW	100	6	09379	, 00100
2064		ZA	E7,100	11	09385	M 09984 00100
2065		CS	JD,100	11	09396	/ 09414 00100
2066	JC	B	JE	7	09407	J 09483
2067	JD	SAR	HOLDA1	7	09414	G 01020 A
2068		SBR	HOLDB1	7	09421	G 01025 B
2069		BBE	JE,100,M	12	09428	W 09483 00100 M
2070		S	EJC,HOLDA1	11	09440	S 09989 01020
2071		BZ	*E8	7	09451	J 09465 V
2072		B	JE	7	09458	J 09483
2073		S	EJC,HOLDB1	11	09465	S 09994 01025
2074		BZ	JF	7	09476	J 09509 V
2075	JE	B	TYPCK	7	09483	J 01071
2076		DCW	a#11.03a,G	6	09495	
2077		BBE	JB,TAD1,1	12	09497	W 09379 01001 1

EXIT RTN HERE AFTER TST 100 LOCNS

. PUT SOME DATA

. IN LOC 00100

CLEAR LOC 00100, SKIP NEXT INSTR

SHOULD NOT BRANCH

SHOULD BRANCH

SHOULD EXIT ROUTINE HERE

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2079	ROUTINE 12.00		INITIALIZE PASS COUNT WORK AREA & LOCATION 00001			
2080						
2081	JF	NOPWM		1	09509	N
2082		B	JG	7	09510	J 09575
2083		SW	*-12	6	09517	I 09510
2084		ZA	PCC,PCCWK	11	09523	M 01010 01015
2085		CS	99	6	09534	/ 00099
2086		SW	1,8	11	09540	, 00001 00008
2087		CW	REPEAT&1	6	09551	D 01982
2088		SAR	6	7	09557	G 00006 A
2089		S	&1,1	11	09564	S 09935 00001

DUMMY INSTRUCTION TO SET ADDR REG

INIT I-ADDR OF BR INSTR AT 00001

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2091	ROUTINE 13.00		CHECK ADDRESSING BY INDEXING			
2092						
2093	SUB-RTN 13.01					
2094	JG	SW	X1-4	6	09575	, 00025
2095		SAR	X1	7	09581	G 00029 A
2096		S	X1,5EX1	11	09588	S 00029 00045
2097		BZ	JHXX1	7	09599	J 09612 V
2098		B	TYPCK	7	09606	J 01071
2099		DCW	a#13.01a,G	6	09618	
2100		BBE	JG,TAD1,1	12	09620	W 09575 01001 1
2101	SUB-RTN 13.02					
2102	JH	SW	X2-4	6	09632	, 00030
2103		SAR	X2	7	09638	G 00034 A
2104		S	X2,5EX2	11	09645	S 00034 0005
2105		BZ	JHXX2	7	09656	J 09609 V
2106		B	TYPCK	7	09663	J 01071
2107		DCW	a#13.02a,G	6	09675	
2108		BBE	JH,TAD1,1	12	09677	W 09632 01001 1
2109	SUB-RTN 13.03					
2110	JI	SW	X3-4	6	09689	, 00035
2111		SAR	X3	7	09695	G 00039 A
2112		S	X3,5EX3	11	09702	S 00039 000M5
2113		BZ	JHXX3	7	09713	J 09706 V
2114		B	TYPCK	7	09720	J 01071
2115		DCW	a#13.03a,G	6	09732	
2116		BBE	JI,TAD1,1	12	09734	W 09689 01001 1
2117	SUB-RTN 13.04					
2118	JJ	SW	X4-4	6	09746	, 00040
2119		SAR	X4	7	09752	G 00044 A
2120		S	X4,5EX4	11	09759	S 00044 00405
2121		BZ	JKXX4	7	09770	J 09Y03 V
2122		B	TYPCK	7	09777	J 01071
2123		DCW	a#13.04a,G	6	09789	
2124		BBE	JJ,TAD1,1	12	09791	W 09746 01001 1
2125	SUB-RTN 13.05					

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2126	JK	SW	X5-4	6	09803	, 00045
2127		SAR	X5	7	09809	G 00049 A
2128		S	X5, 5&X5	11	09816	S 00049 00+*5
2129		BZ	JL&X5	7	09827	J 01SY9 V
2130		B	TYPCK	7	09834	J 01071
2131		DCW	a#13.05a,G	6	09846	
2132		BBE	JK, IAD1,1	12	09848	W 09803 01001 1
2133		B	JL	7	09860	J 01289
2134		H		1	09867	.
2135	ENDPH1	EQU	*			
2136	SUB-RTN 13.06					
2137		ORG	LOWLOC		01289	
2138	JL	SW	X6-4	6	01289	, 00050
2139		SAR	X6	7	01295	G 00054 A
2140		S	X6, 5&X6	11	01302	S 00054 00+*.5
2141		BZ	JM&X6	7	01313	J 01TM6 V
2142		B	TYPCK	7	01320	J 01071
2143		DCW	a#13.06a,G	6	01332	
2144		BBE	JL, IAD1,1	12	01334	W 01289 01001 1
2145	SUB-RTN 13.07					
2146	JM	SW	X7-4	6	01346	, 00055
2147		SAR	X7	7	01352	G 00059 A
2148		S	X7, 5&X7	11	01359	S 00059 00+*M5
2149		BZ	JN&X7	7	01370	J 01UM3 V
2150		B	TYPCK	7	01377	J 01071
2151		DCW	a#13.07a,G	6	01389	
2152		BBE	JM, IAD1,1	12	01391	W 01346 01001 1
2153	SUB-RTN 13.08					
2154	JN	SW	X8-4	6	01403	, 00060
2155		SAR	X8	7	01409	G 00064 A
2156		S	X8, 5&X8	11	01416	S 00064 00+.05
2157		BZ	JP&X8	7	01427	J 01M60 V
2158		B	TYPCK	7	01434	J 01071
2159		DCW	a#13.08a,G	6	01446	
2160		BBE	JN, IAD1,1	12	01448	W 01403 01001 1

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2161	SUB-RTN 13.09					
2162	JP	SW	X9-4	6	01460	, 00065
2163		SAR	X9	7	01466	G 00069 A
2164		S	X9,5EX9	11	01473	S 00069 00.45
2165		BZ	JQEX9	7	01484	J 01N/7 V
2166		B	TYPCK	7	01491	J 01071
2167		DCW	a#13.09a,G	6	01503	
2168		BBE	JP,TAD1,1	12	01505	W 01460 01001 1
2169	SUB-RTN 13.10					
2170	JQ	SW	X10-4	6	01517	, 00070
2171		SAR	X1C	7	01523	G 00074 A
2172		S	X10,5EX10	11	01530	S 00074 00.5
2173		BZ	JREX10	7	01541	J 01NP4 V
2174		B	TYPCK	7	01548	J 01071
2175		DCW	a#13.10a,G	6	01560	
2176		BBE	JQ,TAD1,1	12	01562	W 01517 01001 1
2177	SUB-RTN 13.11					
2178	JR	SW	X11-4	6	01574	, 00075
2179		SAR	X11	7	01580	G 00079 A
2180		S	X11,5EX11	11	01587	S 00079 00.5
2181		BZ	JSEX11	7	01598	J 010C1 V
2182		B	TYPCK	7	01605	J 01071
2183		DCW	a#13.11a,G	6	01617	
2184		BBE	JR,TAD1,1	12	01619	W 01574 01001 1
2185	SUB-RTN 13.12					
2186	JS	SW	X12-4	6	01631	, 00080
2187		SAR	X12	7	01637	G 00084 A
2188		S	X12,5EX12	11	01644	S 00084 00M05
2189		BZ	JTEX12	7	01655	J 01F88 V
2190		B	TYPCK	7	01662	J 01071
2191		DCW	a#13.12a,G	6	01674	
2192		BBE	JS,TAD1,1	12	01676	W 01631 01001 1
2193	SUB-RTN 13.13					
2194	JT	SW	X13-4	6	01688	, 00085
2195		SAR	X13	7	01694	G 00089 A

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2218			COUNT PASSES, PROVIDE FOR PROGRAM MODIFICATION			
2219						
2220	ANYINQ	BNQ	INQ	7	01859	J 01157 Q
2221	REDUCE	S	£1,PCCWK	11	01866	S 09935 01015
2222		BZ	*£8	7	01877	J 01891 V
2223		B	START	7	01884	J 02000
2224		BBE	JVC2,TAD3,1	12	01891	W 01969 01003 1
2225		B	TYPE	7	01903	J 01026
2226		DCW	a-PASS-a,G	6	01915	
2227	JV01	CS	204	6	01917	/ 00204
2228		SW	200	6	01923	, 00200
2229		CW	1004,1003	11	01929	□ 01004 01003
2230		CW	10C2,1001	11	01940	□ 01002 01001
2231		A	10C4,204	11	01951	A 01004 00204
2232		B	LOADER	7	01962	J 00400
2233			EXIT C0208-1 HERE			
2234	JV02	BW	JVC1,999	12	01969	V 01917 00999 1
2235						
2236	REPEAT	CW	JF£1	6	01981	□ 09510
2237		B	START	7	01987	J 02000
2238		H		1	01994	.

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2256			E45679	5	09955	
2256			-45679	5	09960	
2256			-54321	5	09965	
2256			29RIY2	4	09969	
2256			E34567	5	09974	
2256			-34567	5	09979	
2256			E18	2	09981	
2256			E10	2	09983	
2256			E7	1	09984	
2256			JD	5	09989	09414
2256			JC	5	09994	09407

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2258	BLANK	EQU	TABLE			
2259	MINUS7	EQU	PEA			
2260	MINUS8	EQU	QUEUE			
2261	MINUS0	EQU	EXCLAM			
2262						
2263		ORG	1000		01000	
2264						
2265		DC	a a.G	5	01004	
2266						
2267		DCW	£00100	5	01010	PASS COUNT CONSTANT
2268			a a	5	01015	PASS COUNT WORK AREA
2269						
2270			a a	5	01020	. COMMON AREA FOR STORING
2271			a a	5	01025	. ADDRESS REGISTERS
2272						
2273		SBR	*£9	7	01026	G 01041 B
2274		WCP	0	10	01033	M £T0 00000 W
2275		SBR	*£20	7	01043	G 01069 B
2276		BCB1	*-23	7	01050	R 01033 Z
2277		BA1	*£1	7	01057	R 01064 M
2278		B	0	7	01064	J 00000
2279						
2280		SBR	*£39	7	01071	G 01116 B
2281		SBR	*£65	7	01078	G 01149 B
2282		A	*-17,*£54	11	01085	A 01078 01149
2283		B8E	*£25,TAD0,1	12	01096	W 01132 01000 1
2284		WCP	0	10	01108	M £T0 00000 W
2285		BCB1	*-16	7	01118	R 01108 2
2286		BA1	*£1	7	01125	R 01132 M
2287		B8E	*£8,TAD2,1	12	01132	W 01151 01002 1
2288		B	0	7	01144	J 00000
2289		H	*-12	6	01151	. 01144

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PGLIN	LABEL	OPCODE	OPERAND	COMMON ADDRESS	ALTER ROUTINE	CT	ADDRS	INSTRUCTION
2291		RCP	*E26			10	01157	M XTO 01192 R
2292		BNTI	*E39			7	01167	R 01212 B
2293		BEXI	*-23,M			7	01174	R 01157 M
2294		BAI	*E1			7	01181	R 01188 M
2295		RCPW	O			10	01188	L XTO 00000 R
2296		BEXI	*-16,M			7	01198	R 01188 M
2297		BAI	*E1			7	01205	R 01212 M
2298		B	PW			7	01212	J 01854
2299		DCW	aMa			1	01219	
2300								
2301		ORG	CTLIND				01230	
2302		DC	a			9	01238	
2303		DCW	a1.12.101KCZa			11	01249	
2304				10K OR 20K, SEQ NO. 012,				
2305		ORG	IDENT				01250	
2306		DCW	aC020Ba,G			5	01254	
2307								
2308		ORG	SYSCTL				01256	
2309		DC	a			33	01288	

#a

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2311		ORG	START		02000	
2312			PHASE 2 BEGINS HERE			
2313			TYPE IDENT, INITIALIZE LOC 00001-00008 FOR			
2314			RESTART, INITIALIZE PASS COUNTER, RESTORE TADS			
2315						
2316		NCPWM		1	02000	N
2317		B	KA	7	02001	J 02099
2318		SW	*-17,WDSEP	11	02008	, 02001 09906
2319		CS	7	6	02019	/ 00007
2320		SW	1,8	11	02025	, 00001 00008
2321		CW	REDO&1	6	02036	H 01949
2322		SAR	6	7	02042	G 00006 A
2323		S	&1,1	11	02049	S 09954 00001
2324		CS	1004	6	02060	/ 01004
2325		SW	1000	6	02066	, 01000
2326		A	204,1004	11	02072	A 00204 01004
2327		B	TYPE	7	02083	J 01026
2328		DCW	@ C020B-2a,G	8	02097	
2329	KA	NCPWM		1	02099	N
2330		B	KB	7	02100	J 02124
2331		SW	*-12	6	02107	, 02100
2332		ZA	PCC,PCCWK	11	02113	M 01010 01015

PGLIN	LABEL	OPCODE	OPFRAND	CT	ADDRS	INSTRUCTION
2334	ROUTINE 14.00		BEING A TEST IN WHICH THE PROPER OPERATION OF			
2335			INDEXING IS REQUIRED TO PREVENT SYSTEM CK ERRORS			
2336						
2337	SUB-RTN 14.01					
2338	KB	CW	X1,X1-1	11	02124	▣ 00029 00028
2339		CW	X1-2,X1-3	11	02135	▣ 00027 00026
2340		CW	X1-4	6	02146	▣ 00025
2341		SW	X1-5	6	02152	▣ 00024
2342		ZA	ONEHTH,X1	11	02158	▣ 09778 00029
2343		CW	KC&1	6	02169	▣ 02200
2344		SAR	HOLDA2&X15	7	02175	G 01M80 A
2345		S	HOLDA2,X1	11	02182	S 01020 00029
2346		CS	KC&X1	6	02193	/ 02129
2347	KC	SAR	HOLDA2&X1	7	02199	G 010S0 A
2348		ZA	HOLDA2,X1	11	02206	M 01020 00029
2349		BZ	*&8&X1	7	02217	J 022T1 V
2350		B	KD	7	02224	J 02273
2351		ZS	&99999,X1	11	02231	▣ 09959 00029
2352		SW	0&X1	6	02242	▣ 000#0
2353		SAR	HOLDA2	7	02248	G 01020 A
2354		ZS	HOLDA2,X1	11	02255	▣ 01020 00029
2355		BZ	KFC1&X1	7	02266	J 022Z9 V
2356	KD	B	TYPCK	7	02273	J 01071
2357		DCW	a#14.01a,G	6	02285	
2358		BBE	KB,TAD1,1	12	02287	W 02124 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2360	ROUTINE 15.00		CHECK OPERATION OF BRANCH CHARACTER EQUAL			
2361						
2362	SUB-RTN 15.01		COMPARE D-MOD 9 WITH B-FLD 2 FOR LO COMPARE			
2363			AND NO BRANCH. CHECK AAR & BAR SETTINGS			
2364	KF01	BCE	KF02,ATSIGN,9	12	02299	B 02382 09911 9
2365		SAR	HOLDA2	7	02311	G 01020 A
2366		SBR	HOLDB2	7	02318	G 01025 B
2367		BL	*E8	7	02325	J 02339 T
2368		B	KF02	7	02332	J 02382
2369		S	EKF02,HOLDA2	11	02339	S 09964 01020
2370		BZ	*E8	7	02350	J 02364 V
2371		B	KF02	7	02357	J 02382
2372		S	EPCUND,HOLDB2	11	02364	S 09969 01025
2373		BZ	KF03	7	02375	J 02408 V
2374	KF02	B	TYPCK	7	02382	J 01071
2375		DCW	@#15.012,G	6	02394	
2376		BBE	KF01,TAD1,1	12	02396	W 02299 01001 1
2377	SUB-RTN 15.02		COMPARE D-MOD AT SIGN WITH B-FLD NINE			
2378			FOR HI COMPARE AND NO BRANCH.			
2379	KF03	BCE	KF04,NINE,@	12	02408	B 02441 09953 2
2380		BH	*E8	7	02420	J 02434 U
2381		B	*E8	7	02427	J 02441
2382		BH	KF05	7	02434	J 02467 U
2383	KF04	B	TYPCK	7	02441	J 01071
2384		DCW	@#15.022,G	6	02453	
2385		BBE	KF03,TAD1,1	12	02455	W 02408 01001 1

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PGLIN	LABEL	OPC00	OPERAND	CT	ADDRS	INSTRUCTION
2387	SUB-RTN 15.03		COMPARE D-MOD AMPERSAND W/8-FLD AMPERSAND FOR			
2388			EQ COMPARE AND BRANCH. CHECK AAR & BAR SETTINGS			
2389	KF05	BCE	KF07,AMPSND,& SHOULD BRANCH	12	02467	B 02486 09896 &
2390	KF06	B	KF08	7	02479	J 02564
2391	KF07	SAR	HOLDA2	7	02486	G 01020 A
2392		SBR	HOLDB2	7	02493	G 01025 B
2393		BU	KF08	7	02500	J 02564 /
2394		BE	*E8	7	02507	J 02521 S
2395		B	KF08	7	02514	J 02564
2396		S	&KF07,HOLDA2	11	02521	S 09974 01020
2397		BZ	*E8	7	02532	J 02546 V
2398		B	KF08	7	02539	J 02564
2399		S	&KF06,HOLDB2	11	02546	S 09979 01025
2400		BZ	KG	7	02557	J 02590 V
2401	KF08	B	TYPCK	7	02564	J 01071
2402		DCW	@#15.03@,G	6	02576	
2403		BBE	KFC5,IAD1,1	12	02578	W 02467 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2405	ROUTINE 16.00		CHECK CERTAIN MOVE OPCODES PREPARATORY TO COMPARE			
2406						
2407	SUB-RTN 16.01		CHECK SCNLS FOR STEPPING AAR, BAR ONE POSITION			
2408	KG	CS	103	6	02590	/ 00103
2409		SCNLS	102,103	12	02596	D 00102 00103
2410		SAR	HOLDA2	7	02608	G 01020 A
2411		SBR	HOLDB2	7	02615	G 01025 B
2412		S	2001012,HOLDA2	11	02622	S 09984 01020
2413		BZ	*E8	7	02633	J 02647 V
2414		B	KH	7	02640	J 02665
2415		S	2001022,HOLDB2	11	02647	S 09989 01025
2416		BZ	KI	7	02658	J 02691 V
2417	KH	B	TYPCK	7	02665	J 01071
2418		DCW	2#16.012,G	6	02677	
2419		BEE	KG,TAD1,1	12	02679	W 02590 01001 1
2420	SUB-RTN 16.02		CHECK MLNS FOR CORRECT OPERATION			
2421	KI	CS	101	6	02691	/ 00101
2422		SW	10C	6	02697	Q 00100
2423		ZA	MINUS7,101	11	02703	M 09932 00101
2424		MLNS	WYE,101	12	02714	D 09942 00101 1
2425		BEE	KJ,101,X	12	02726	W 02781 00101 X
2426		BW	KJ,101	12	02738	V 02781 00101 1
2427		BEE	*E8,101,-	12	02750	W 02769 00101 -
2428		B	KJ	7	02762	J 02781
2429		BEE	KK,101,8	12	02769	W 02807 00101 8
2430	KJ	B	TYPCK	7	02781	J 01071
2431		DCW	2#16.022,G	6	02793	
2432		BEE	KI,TAD1,1	12	02795	W 02691 01001 1
2433	SUB-RTN 16.03		CHECK MLZS FOR CORRECT OPERATION			
2434	KK	CS	101	6	02807	/ 00101
2435		SW	10C	6	02813	Q 00100
2436		ZA	MINUS8,101	11	02819	M 09933 00101
2437		MLZS	EKS,101	12	02830	D 09941 00101 2
2438		BEE	KL,101,P	12	02842	W 02897 00101 P
2439		BW	KL,101	12	02854	V 02897 00101 1

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RGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2440		BBE	*E8,101,8	12	02866	W 02885 00101 8
2441		B	KL	7	02878	J 02897
2442		BBE	KM,101,B ^S	12	02885	W 02923 00101 B ^S
2443	KL	B	TYPCK	7	02897	J 01071
2444		DCW	a#16.03a,G	6	02909	
2445		BBE	KK,TAD1,1	12	02911	W 02807 01001 1
2446		SUB-RTN 16.04 CHECK MLCS FOR CORRECT OPERATION				
2447	KM	CS	101	6	02923	/ 00101
2448		SW	100	6	02929	, 00100
2449		ZA	MINUS0,101	11	02935	M 09925 00101
2450		MLCS	VEE,101	12	02946	D 09939 00101 3
2451		BW	KN,101	12	02958	V 03032 00101 1
2452		BBE	KN,101,.	12	02970	W 03032 00101 .
2453		BBE	*E8,101,1	12	02982	W 03001 00101 1
2454		B	KN	7	02994	J 03032
2455		BBE	*E8,101,4	12	03001	W 03020 00101 4
2456		B	KN	7	03013	J 03032
2457		BBE	KR,101,B ^S	12	03020	W 03058 00101 B ^S
2458	KN	B	TYPCK	7	03032	J 01071
2459		DCW	a#16.04a,G	6	03044	
2460		BBE	KM,TAD1,1	12	03046	W 02923 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2462	ROUTINE 17.00		CHECK COMPARE OPCODE USING SINGLE CHARACTERS			
2463						
2464			BEGIN BY USING SIMPLEST COMPARISONS TO VERIFY			
2465			CORRECT OPERATION OF BRANCH HI, LO, EQ, UNEQUAL			
2466						
2467	SUB-RTN 17.01		COMPARE A-FLD 9 WITH B-FLD 2 FOR LO COMPARE			
2468	KR	C	NINE,ATSIGN	11	03058	C 09953 09911
2469		BE	KS	7	03069	J 03104 S
2470		BU	*E8	7	03076	J 03090 /
2471		B	KS	7	03083	J 03104
2472		BF	*E8	7	03090	J 03104 U
2473		BL	KT	7	03097	J 03130 T
2474	KS	B	TYPCK	7	03104	J 01071
2475		DCW	@#17.01@,G	6	03116	
2476		BBE	KR,TAD1,1	12	03118	W 03058 01001 1
2477	SUB-RTN 17.02		COMPARE A-FLD 2 WITH B-FLD 9 FOR HI COMPARE			
2478	KT	C	ATSIGN,NINE	11	03130	C 09911 09953
2479		BE	KU	7	03141	J 03176 S
2480		BU	*E8	7	03148	J 03162 /
2481		B	KU	7	03155	J 03176
2482		BL	KU	7	03162	J 03176 T
2483		BF	KV	7	03169	J 03202 U
2484	KU	B	TYPCK	7	03176	J 01071
2485		DCW	@#17.02@,G	6	03188	
2486		BBE	KT,TAD1,1	12	03190	W 03130 01001 1
2487	SUB-RTN 17.03		COMPARE AMPERSAND WITH AMPERSAND FOR EQ COMPARE			
2488	KV	C	AMPSND,AMPSND	11	03202	C 09896 09896
2489		BU	KW	7	03213	J 03241 /
2490		BF	KW	7	03220	J 03241 U
2491		BL	KW	7	03227	J 03241 T
2492		BE	KX	7	03234	J 03267 S
2493	KW	B	TYPCK	7	03241	J 01071
2494		DCW	@#17.03@,G	6	03253	
2495		BBE	KV,TAD1,1	12	03255	W 03202 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2497	ROUTINE 18.00		IF THE THREE ROUTINES #17.01 - #17.03 CAUSED NO			
2498			ERRORS, CORRECT OPERATION OF BU, BE, BH AND BL			
2499			IS NOW ASSUMED. PROPER OPERATION OF THESE FOUR			
2500			CONDITIONAL BRANCHES IS A NECESSARY REQUIREMENT			
2501			FOR THE SUBROUTINE #18.01 WHICH FOLLOWS.			
2502						
2503			THIS ROUTINE COMPARES ALL SIXTY-FOUR LEGITIMATE			
2504			CHARACTERS WITH ONE ANOTHER AND INSURES THAT ALL			
2505			IDENTICAL CHARACTERS COMPARE EQUAL, THAT NO			
2506			CHARACTER COMPARES EQUAL TO ANY CHARACTER EXCEPT			
2507			ITSELF, AND THAT THE COLLATING SEQUENCE IS PROPER			
2508						
2509	SUB-RTN 18.01		COMPARE ALL 64 CHARS VS ALL 64 CHARS. 4096 TOTAL			
2510						
2511			BECAUSE THE TIME REQUIRED TO PERFORM THIS ROUTINE			
2512			IS RELATIVELY LONG, IT IS DONE THE FIRST TIME			
2513			THROUGH C020B-2 AND THEREAFTER ONLY WHEN THE			
2514			PASS COUNT CONSTANT WORK AREA IS REDUCED TO ZERO			
2515						
2516	KX	NOPWM		1	03267	N
2517		B	KEY	7	03268	J 04011
2518		ZA	EQ096,LIMIT	11	03275	M 09993 09816
2519		CW	TYPESWEL	6	03286	□ 03723
2520		CW	X1,X2	11	03292	□ 00029 00034
2521		CW	X1-1,X2-1	11	03303	□ 00028 00033
2522		CW	X1-2,X2-2	11	03314	□ 00027 00032
2523		CW	X1-3,X2-3	11	03325	□ 00026 00031
2524		SW	X1-4,X2-4	11	03336	• 00025 00030
2525		SW	EQU1SWEL,ANYERR&1 FORCE 1ST CMP EQ & INITIALIZATION	11	03347	• 03444 03425
2526		ZA	EQ64,X2	11	03358	M 09995 00034
2527		ZA	EQ63,HISTRT	11	03369	M 09997 09818
2528		ZA	EQ63,HICNT	11	03380	M 09997 09822
2529		ZA	EQ1,LOSTRT	11	03391	M 09954 09820
2530		ZA	EQ1,LOCNT	11	03402	M 09954 09824
2531	RETURN	ZA	EQ64,X1	11	03413	M 09995 00029

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2532	ANYERR	NOPWM		1	03424	N
2533		B	REINIT	7	03425	J 03944
2534	COMPAR	C	TABLE-1&X1, TABLE-1&X2	11	03432	C 098Y9 098Q9
2535	EQU LSW	NOPWM		1	03443	N
2536		B	SBEQUL	7	03444	J 03654
2537		BE	COMPERR	7	03451	J 03715 S
2538		DCW	AN5a	2	03459	
2539		BU	*E10	7	03460	J 03476 /
2540		B	COMPERR	7	03467	J 03715
2541		DCW	AN6a	2	03475	
2542	HILOSW	NOPWM		1	03476	N
2543		B	SBLO	7	03477	J 03569
2544		BL	COMPERR	7	03484	J 03715 T
2545		DCW	AN9a	2	03492	
2546		BH	*E10	7	03493	J 03509 U
2547		B	COMPERR	7	03500	J 03715
2548		DCW	ANXa	2	03508	
2549		S	E1, HICNT	11	03509	S 09954 09822
2550		BZ	*E8	7	03520	J 03534 V
2551		B	COMMON	7	03527	J 03811
2552		SW	HILOSW&1	6	03534	, 03477
2553		S	E1, HISTRT	11	03540	S 09954 09818
2554		ZA	HISTRT, HICNT	11	03551	M 09818 09822
2555		B	COMMON	7	03562	J 03811
2556	SBLO	BH	COMPERR	7	03569	J 03715 U
2557		DCW	AN7a	2	03577	
2558		BL	*E10	7	03578	J 03594 T
2559		B	COMPERR	7	03585	J 03715
2560		DCW	AN8a	2	03593	
2561		S	E1, LOCNT	11	03594	S 09954 09824
2562		BZ	*E8	7	03605	J 03619 V
2563		B	COMMON	7	03612	J 03811
2564		SW	EQU LSW&1	6	03619	, 03444
2565		A	E1, LOSTRT	11	03625	A 09954 09820
2566		ZA	LOSTRT, LOCNT	11	03636	M 09820 09824

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2567		B	COMMON	7	03647	J 03811
2568	S8EQU	BU	CMPIRR	7	03654	J 03715 /
2569		DCW	AN12	2	03662	
2570		BF	CMPIRR	7	03663	J 03715 U
2571		DCW	AN22	2	03671	
2572		BL	CMPIRR	7	03672	J 03715 T
2573		DCW	AN32	2	03680	
2574		BE	*E10	7	03681	J 03697 S
2575		B	CMPIRR	7	03688	J 03715
2576		DCW	AN42	2	03696	
2577		CH	EQU1SW21,HILOSWE1	11	03697	D 03444 03477
2578		B	COMMON	7	03708	J 03811
2579						
2580	CMPIRR	SBR	X3	7	03715	G 00039 B
2581	TYPE5W	NOPWM		1	03722	N
2582		B	AROUND	7	03723	J 03750
2583		SW	*-12	6	03730	, 03723
2584		B	TYPCK	7	03736	J 01071
2585		DCW	AN18.012.G	6	03748	
2586	AROUND	BEE	COMPAR,TAD1,1	12	03750	W 03432 01001 1
2587		BEE	OUT,TAD0,1	12	03762	W 03804 01000 1
2588		MLCS	1EX3,3EX4	12	03774	D 000M1 00+03 3
2589		SBR	X4	7	03786	G 00044 B
2590		SW	COMMON21,ANYERR21	11	03793	, 03812 03425
2591	OUT	B	2EX3	7	03804	J 000M2
2592						
2593	COMMON	NOPWM		1	03811	N
2594		B	*E8	7	03812	J 03826
2595		B	DIMIN	7	03819	J 03883
2596		CH	COMMON21	6	03826	D 03812
2597		MLCS	TABLE-1EX1,MESAG21	12	03832	D 098Y9 03864 3
2598		MLCS	TABLE-1EX2,MESAG26	12	03844	D 098Q9 03869 3
2599		B	TYPE	7	03856	J 01026
2600	MESAG	DCW	2 * VS * ERR * * * *2,G * - FILLED IN BY ER ROUTINE	19	03863	
2601						

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2602	CIMIN	S	£1,LIMIT	11	03883	S 09954 09816
2603		BZ	KX01	7	03894	J 04005 V
2604		S	£1,X1	11	03901	S 09954 00029
2605		BZ	*£8	7	03912	J 03926 V
2606		B	ANYERR	7	03919	J 03424
2607		S	£1,X2	11	03926	S 09954 00034
2608		B	RETURN	7	03937	J 03413
2609						
2610	REINIT	CW	ANYERR£1,MESAG£10	11	03944	□ 03425 03873
2611		SBR	X4	7	03955	G 00044 B
2612		MLCS	BLANK,MESAG£14	12	03962	D 09890 03877 3
2613		MLCS	BLANK,MESAG£16	12	03974	D 09890 03879 3
2614		MLCS	BLANK,MESAG£18	12	03986	D 09890 03881 3
2615		B	COMPAR	7	03998	J 03432
2616	KX01	SW	KX£1	6	04005	, 03268
2617	SUB-RTN 18.02		COMPARE TWO FIELDS, A LONGER THAN B.			
2618			CHECK RESULTS OF COMPARE AND ADDRESS REG SETTINGS			
2619	KY	C	FIELD1,FIELD2	11	04011	C 09802 09805
2620		SAR	HOLDA2	7	04022	G 01020 A
2621		SBR	HOLDB2	7	04029	G 01025 B
2622		BE	KZ	7	04036	J 04107 S
2623		BH	KZ	7	04043	J 04107 U
2624		BL	*£8	7	04050	J 04064 T
2625		B	KZ	7	04057	J 04107
2626		S	AACDR1,HOLDA2	11	04064	S 09783 01020
2627		BZ	*£8	7	04075	J 04089 V
2628		B	KZ	7	04082	J 04107
2629		S	BACDR1,HOLDB2	11	04089	S 09788 01025
2630		BZ	LB	7	04100	J 04133 V
2631	KZ	B	TYPCK	7	04107	J 01071
2632		DCW	a#18.02a,G	6	04119	
2633		BBE	KY,TAD1.1	12	04121	W 04011 01001 I
2634	SUB-RTN 18.03		COMPARE TWO FIELDS, B LONGER THAN A.			
2635			CHECK RESULTS OF COMPARE AND ADDRESS REG SETTINGS			
2636	LB	C	FIELD3,FIELD4	11	04133	C 09808 09812

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2637		SAR	HOLDA2	7	04144	G 01020 A
2638		SBR	HOLDB2	7	04151	G 01025 B
2639		BE	LC	7	04158	J 04229 S
2640		BL	LC	7	04165	J 04229 T
2641		BH	*E8	7	04172	J 04186 U
2642		B	LC	7	04179	J 04229
2643		S	AACDR2,HOLDA2	11	04186	S 09793 01020
2644		BZ	*E8	7	04197	J 04211 V
2645		B	LC	7	04204	J 04229
2646		S	BACDR2,HOLDB2	11	04211	S 09798 01025
2647		BZ	LK	7	04222	J 04255 V
2648	LC	B	TYPCK	7	04229	J 01071
2649		DCW	#18.032,G	6	04241	
2650		BBE	LB,TAD1,1	12	04243	W 04133 01001 1

SHOULD NOT BRANCH EQUAL

SHOULD NOT BRANCH LCW

SHOULD BRANCH HIGH

SHOULD BRANCH & EXIT ROUTINE HERE

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2652	ROUTINE 19.00		CHECK OPERATION OF DATA MOVE INSTRUCTION			
2653						
2654	SUB-RTN 19.01		CHECK SCNLS FOR MOVE NO DATA			
2655	LK	MLCS	NWM63,WORK6	12	04255	D 09888 09825 3
2656		SW	WORK6	6	04267	, 09825
2657		SCNLS	NWM00,WORK6	12	04273	D 09826 09825
2658		C	ALLBIT,WORK6	11	04285	C 09895 09825
2659		BE	LL	7	04296	J 04329 S
2660		B	TYPCK	7	04303	J 01071
2661		DCW	a#19.01a,G	6	04315	
2662		BBE	LK,TAD1,1	12	04317	W 04255 01001 1
2663	SUB-RTN 19.02		CHECK MLNS FOR MOVE NUMERIC, NO ZONES, NO WM			
2664	LL	MLCS	NWM62,WORK6	12	04329	D 09887 09825 3
2665		SW	WORK6	6	04341	, 09825
2666		MLNS	NWM01,WORK6	12	04347	D 09827 09825 1
2667		C	AYE,WORK6	11	04359	C 09916 09825
2668		BE	LM	7	04370	J 04403 S
2669		B	TYPCK	7	04377	J 01071
2670		DCW	a#19.02a,G	6	04389	
2671		BBE	LL,TAD1,1	12	04391	W 04329 01001 1
2672	SUB-RTN 19.03		CHECK MLZS FOR MOVE ZONES, NO NUMERIC, NO WM			
2673	LM	MLCS	NWM31,WORK6	12	04403	D 09856 09825 3
2674		SW	WORK6	6	04415	, 09825
2675		MLZS	NWM32,WORK6	12	04421	D 09857 09825 2
2676		C	DELTA,WORK6	11	04433	C 09901 09825
2677		BE	LN	7	04444	J 04477 S
2678		B	TYPCK	7	04451	J 01071
2679		DCW	a#19.03a,G	6	04463	
2680		BBE	LM,TAD1,1	12	04465	W 04403 01001 1
2681	SUB-RTN 19.04		CHECK MLCS FOR MOVE NUMERIC, ZONE, NO WM			
2682	LN	MLNS	NWM25,WORK6	12	04477	D 09851 09825 1
2683		MLZS	NWM25,WORK6	12	04489	D 09851 09825 2
2684		SW	WORK6	6	04501	, 09825
2685		MLCS	NWM38,WORK6	12	04507	D 09863 09825 3
2686		C	OH,WORK6	11	04519	C 09931 09825

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2687		BE	LP	7	04530	J 04563 S
2688		B	TYPCK	7	04537	J 01071
2689		DCW	a#19.04a,G	6	04549	
2690		BBE	LN,TAD1,1	12	04551	W 04477 01001 1
2691	SUB-RTN 19.05		CHECK MLWS FOR MOVE WM, NO ZONE, NO NUMERIC			
2692	LP	MLCS	NWM63,WORK6	12	04563	D 09888 09825 3
2693		CW	WORK6	6	04575	D 09825
2694		MLWS	BLANK,WORK6	12	04581	D 09890 09825 4
2695		C	ALLBIT,WORK6	11	04593	C 09895 09825
2696		BE	LQ	7	04604	J 04637 S
2697		B	TYPCK	7	04611	J 01071
2698		DCW	a#19.05a,G	6	04623	
2699		BBE	LP,TAD1,1	12	04625	W 04563 01001 1
2700	SUB-RTN 19.06		CHECK MLNWS FOR MOVE NUMERIC, WM, NO ZONE			
2701	LQ	MLCS	NWM54,WORK6	12	04637	D 09879 09825 3
2702		CW	WORK6	6	04649	D 09825
2703		MLNWS	NINE,WORK6	12	04655	D 09953 09825 5
2704		C	EYE,WORK6	11	04667	C 09924 09825
2705		BE	LR	7	04678	J 04711 S
2706		B	TYPCK	7	04685	J 01071
2707		DCW	a#19.06a,G	6	04697	
2708		BBE	LQ,TAD1,1	12	04699	W 04637 01001 1
2709	SUB-RTN 19.07		CHECK MLZWS FOR MOVE ZONE, WM, NO NUMERIC			
2710	LR	MLCS	NWM31,WORK6	12	04711	D 09856 09825 3
2711		CW	WORK6	6	04723	D 09825
2712		MLZWS	DASH,WORK6	12	04729	D 09902 09825 6
2713		C	DELTA,WORK6	11	04741	C 09901 09825
2714		BE	LS	7	04752	J 04785 S
2715		B	TYPCK	7	04759	J 01071
2716		DCW	a#19.07a,G	6	04771	
2717		BBE	LR,TAD1,1	12	04773	W 04711 01001 1
2718	SUB-RTN 19.08		CHECK MLCWS FOR MOVE CHARACTER AND WORD MARK			
2719	LS	MLCS	NWM00,WORK6	12	04785	D 09826 09825 3
2720		CW	WORK6	6	04797	D 09825
2721		MLCWS	ALLBIT,WORK6	12	04803	D 09895 09825 7

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2722		C	ALLBIT,WORK6	11	04815	C 09895 09825
2723		BE	LT	7	04826	J 04859 S
2724		B	TYPCK	7	04833	J 01071
2725		DCW	@#19.08@,G	6	04845	
2726		B8E	LS,TAD1,1	12	04847	W 04785 01001 1
2727	SUB-RTN 19.09		CHECK SCNR FOR MOVE NO DATA, PROPER ADDR REG STEP			
2728	LT	MLCWS	NWM63,100	12	04859	D 09888 00100 7
2729		MLCWS	BLANK,101	12	04871	D 09890 00101 7
2730		SCNR	100,101	12	04883	D 00100 00101 8
2731		SAR	HOLDA2	7	04895	G 01020 A
2732		SBR	HOLDB2	7	04902	G 01025 B
2733		C	HOLDA2,@00101@	11	04909	C 01020 09984
2734		BU	LU	7	04920	J 05025 /
2735		C	HOLDB2,@00102@	11	04927	C 01025 09989
2736		BU	LU	7	04938	J 05025 /
2737		C	BLANK,101	11	04945	C 09890 00101
2738		BU	LU	7	04956	J 05025 /
2739		SCNR	101,100	12	04963	D 00101 00100 8
2740		SAR	HOLDA2	7	04975	G 01020 A
2741		SBR	HOLDB2	7	04982	G 01025 B
2742		C	HOLDA2,@00102@	11	04989	C 01020 09989
2743		BU	LU	7	05000	J 05025 /
2744		C	HOLDB2,@00101@	11	05007	C 01025 09984
2745		BE	LV	7	05018	J 05051 S
2746	LU	B	TYPCK	7	05025	J 01071
2747		DCW	@#19.09@,G	6	05037	
2748		B8E	LT,TAD1,1	12	05039	W 04859 01001 1
2749	SUB-RTN 19.10		CHECK MRN SIMILAR TO MLNS			
2750	LV	MLCWS	NWM50,WORK6	12	05051	D 09875 09825 7
2751		MRN	COLON,WORK6	12	05063	D 09912 09825 9
2752		BW	*E13,WORK6	12	05075	V 05099 09825 1
2753		BCE	LW,WORK6,B	12	05087	B 05125 09825 8
2754		B	TYPCK	7	05099	J 01071
2755		DCW	@#19.10@,G	6	05111	
2756		B8E	LV,TAD1,1	12	05113	W 05051 01001 1

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2757	SUB-RTN 19.11	CHECK MRZ				
2758	LW	MLCWS	NWM47,WORK6	12	05125	D 09872 09825 7
2759		MRZ	SUBLNK,WORK6	12	05137	D 09909 09825 0
2760		BW	*E13,WORK6	12	05149	V 05173 09825 1
2761		BCE	LX,WORK6,M	12	05161	B 05199 09825 M
2762		B	TYPCK	7	05173	J 01071
2763		DCW	a#19.11a,G	6	05185	
2764		BBE	LW,TAD1,1	12	05187	W 05125 01001 1
2765	SUB-RTN 19.12	CHECK MRC				
2766	LX	MLCWS	NWM12,WORK6	12	05199	D 09838 09825 7
2767		MRC	SEE,WORK6	12	05211	D 09918 09825 #
2768		BW	*E13,WORK6	12	05223	V 05247 09825 1
2769		BCE	LY,WORK6,C	12	05235	B 05273 09825 C
2770		B	TYPCK	7	05247	J 01071
2771		DCW	a#19.12a,G	6	05259	
2772		BBE	LX,TAD1,1	12	05261	W 05199 01001 1
2773	SUB-RTN 19.13	CHECK MRW				
2774	LY	MLCWS	ALLBIT,WORK6	12	05273	D 09895 09825 7
2775		MRW	NWM00,WORK6	12	05285	D 09826 09825 a
2776		BW	*E13,WORK6	12	05297	V 05321 09825 1
2777		BCE	LZ,WORK6,M	12	05309	B 05347 09825 M
2778		B	TYPCK	7	05321	J 01071
2779		DCW	a#19.13a,G	6	05333	
2780		BBE	LY,TAD1,1	12	05335	W 05273 01001 1
2781	SUB-RTN 19.14	CHECK MRNW				
2782	LZ	MLCWS	QUESTN,WORK6	12	05347	D 09915 09825 7
2783		MRNW	NWM05,WORK6	12	05359	D 09831 09825 :
2784		BW	*E13,WORK6	12	05371	V 05395 09825 1
2785		BCE	MA,WORK6,E	12	05383	B 05421 09825 E
2786		B	TYPCK	7	05395	J 01071
2787		DCW	a#19.14a,G	6	05407	
2788		BBE	LZ,TAD1,1	12	05409	W 05347 01001 1
2789	SUB-RTN 19.15	CHECK MRZW				
2790	MA	MLCWS	TPMARK,WORK6	12	05421	D 09914 09825 7
2791		MRZW	NWM48,WORK6	12	05433	D 09873 09825 T

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2792		BW	*&13,WORK6	12	05445	V 05469 09825 1
2793		BCE	MB,WORK6,M	12	05457	B 05495 09825 M
2794		B	TYPCK	7	05469	J 01071
2795		DCW	@#19.15@,G	6	05481	
2796		BBE	MA,TAD1.1	12	05483	M 05421 01001 1
2797	SUB-RTN 19.16		CHECK MRCW			
2798	MB	MLCWS	EMM,WORK6	12	05495	D 09929 09825 7
2799		MRCW	NWM27,WORK6	12	05507	D 09852 09825 M
2800		BW	*&13,WORK6	12	05519	V 05543 09825 1
2801		BCE	MC,WORK6,,	12	05531	B 05569 09825 ,
2802		B	TYPCK	7	05543	J 01071
2803		DCW	@#19.16@,G	6	05555	
2804		BBE	MB,TAD1.1	12	05557	M 05495 01001 1
2805	SUB-RTN 19.17		CHECK SCNLA FOR MOVE NO DATA, PROPER ADDR REG STP			
2806	MC	MLCWS	LBRAKT,102	12	05569	D 09893 00102 7
2807		MLCWS	NWM02,103	12	05581	D 09828 00103 7
2808		MLCWS	LBRAKT,104	12	05593	D 09893 00104 7
2809		SCNLA	103,104	12	05605	D 00103 00104 B
2810		SAR	HOLDA2	7	05617	G 01020 A
2811		SBR	HOLDB2	7	05624	G 01025 B
2812		C	HOLDA2,@00101@	11	05631	C 01020 09984
2813		BU	MD	7	05642	J 05685 /
2814		C	HOLDB2,@00102@	11	05649	C 01025 09989
2815		BU	MD	7	05660	J 05685 /
2816		C	NWM61,104	11	05667	C 09886 00104
2817		BE	ME	7	05678	J 05711 S
2818	MD	B	TYPCK	7	05685	J 01071
2819		DCW	@#19.17@,G	6	05697	
2820		BBE	MC,TAD1.1	12	05699	M 05569 01001 1
2821	SUB-RTN 19.18		CHECK MLNA			
2822	ME	MLCWS	DELTA,102	12	05711	D 09901 00102 7
2823		MLCWS	NWM16,103	12	05723	D 09842 00103 7
2824		MLCWS	DELTA,104	12	05735	D 09901 00104 7
2825		MLNA	103,104	12	05747	D 00103 00104 /
2826		C	NWM32,104	11	05759	C 09857 00104

TEST THAT NO DATA WERE MOVED

SHOULD BRANCH & EXIT ROUTINE HERE

** ALL #19.17 ERRORS COME HERE

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2827		BE	MF	7	05770	J 05803 S
2828		B	TYPCK	7	05777	J 01071
2829		DCW	a#19.18a,G	6	05789	
2830		BBE	ME,TAD1,1	12	05791	W 05711 01001 1
2831	SUB-RTN 19.19		CHECK MLZA			
2832	MF	MLCWS	PERCNT,102	12	05803	D 09905 00102 7
2833		MLCWS	NWM35,103	12	05815	D 09860 00103 7
2834		MLCWS	PERCNT,104	12	05827	D 09905 00104 7
2835		MLZA	103,104	12	05839	D 00103 00104 S
2836		C	NWM44,104	11	05851	C 09869 00104
2837		BE	MG	7	05862	J 05895 S
2838		B	TYPCK	7	05869	J 01071
2839		DCW	a#19.19a,G	6	05881	
2840		BBE	MF,TAD1,1	12	05883	W 05803 01001 1
2841	SUB-RTN 19.20		CHECK MLCA			
2842	MG	MLCWS	NWM63,WORK6	12	05895	D 09888 09825 7
2843		MLCA	BLANK,WORK6	12	05907	D 09890 09825 1
2844		BW	*E13,WORK6	12	05919	V 05943 09825 1
2845		BCE	MH,WORK6,	12	05931	B 05969 09825
2846		B	TYPCK	7	05943	J 01071
2847		DCW	a#19.20a,G	6	05955	
2848		BBE	MG,TAD1,1	12	05957	W 05895 01001 1
2849	SUB-RTN 19.21		CHECK MLWA			
2850	MH	MLCWS	NWM53,WORK6	12	05969	D 09878 09825 7
2851		MLWA	NAUGHT,WORK6	12	05981	D 09944 09825 U
2852		C	NWM53,WORK6	11	05993	C 09878 09825
2853		BE	MI	7	06004	J 06037 S
2854		B	TYPCK	7	06011	J 01071
2855		DCW	a#19.21a,G	6	06023	
2856		BBE	MH,TAD1,1	12	06025	W 05969 01001 1
2857	SUB-RTN 19.22		CHECK MLNWA			
2858	MI	MLCWS	NWM47,WORK6	12	06037	D 09872 09825 7
2859		MLNWA	SUBLNK,WORK6	12	06049	D 09909 09825 V
2860		C	NWM32,WORK6	11	06061	C 09857 09825
2861		BE	MJ	7	06072	J 06105 S

SHOULD BRANCH & EXIT ROUTINE HERE

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PGLIN	LABEL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
2862		B	TYPCK	7	06079	J 01071
2863		DCW	a#19.22a,G	6	06091	
2864		BBE	MI,TAD1,1	12	06093	W 06037 01001 1
2865	SUB-RTN 19.23		CHECK MLZWA			
2866	MJ	MLCWS	NWM03,WORK6	12	06105	D 09829 09825 7
2867		MLZWA	LOZNGE,WORK6	12	06117	D 09892 09825 W
2868		C	NWM51,WORK6	11	06129	C 09876 09825
2869		BE	MK	7	06140	J 06173 S
2870		B	TYPCK	7	06147	J 01071
2871		DCW	a#19.23a,G	6	06159	
2872		BBE	MJ,TAD1,1	12	06161	W 06105 01001 1
2873	SUB-RTN 19.24		CHECK MLCWA			
2874	MK	MLCWS	ALLBIT,102	12	06173	D 09895 00102 7
2875		MLCWS	NWM00,103	12	06185	D 09826 00103 7
2876		MLCWS	ALLBIT,104	12	06197	D 09895 00104 7
2877		MLCWA	103,104	12	06209	D 00103 00104 X
2878		BW	*E13,104	12	06221	V 06245 00104 1
2879		BCE	ML,104,	12	06233	B 06270 00104
2880		B	TYPCK	7	06245	J 01071
2881		DCW	a#19.24a	6	06257	
2882		BBE	MK,TAD1,1	12	06258	W 06173 01001 1
2883	SUB-RTN 19.25		CHECK SCNRR FOR MOVE NO DATA, PROPER ADDR REG STP			
2884	ML	MLCWA	NWM26,101	12	06270	D 09889 00101 X
2885		MLCWS	GREATR,37	12	06282	D 09913 00037 7
2886		MLCWS	NWM49,36	12	06294	D 09874 00036 7
2887		SCNRR	37,36	12	06306	D 00037 00036 Y
2888		SAR	HOLDA2	7	06318	G 01020 A
2889		SBR	HOLDB2	7	06325	G 01025 B
2890		C	HOLDA2,a00102a	11	06332	C 01020 09989
2891		BU	MM	7	06343	J 06392 /
2892		C	HOLDB2,a00101a	11	06350	C 01025 09984
2893		BU	MM	7	06361	J 06392 /
2894		SW	38	6	06368	, 00038
2895		C	NWM26,101	11	06374	C 09889 00101
2896		BE	MN	7	06385	J 06418 S

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CHECK AAR FOR PROPER STEPPING

SHOULD NOT BRANCH

CHECK BAR FOR PROPER STEPPING

SHOULD NOT BRANCH

TEST THAT NO DATA WERE MOVED

SHOULD BRANCH & EXIT ROUTINE HERE

C02CB-2 141C CPU ERROR DETECTION

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2897	MM	B	TYPCK	7	06392	J 01071
2898		DCW	a#19.25a,G	6	06404	
2899		BBE	ML,TAD1,1	12	06406	W 06270 01001 1
2900	SUB-RTN 19.26	CHECK MRNR				
2901	MM	CW	100	6	06418	D 00100
2902		MRCW	K01,100	12	06424	D 09745 00100 M
2903		MRNR	K02,100	12	06436	D 09747 00100 Z
2904		BW	MP,100	12	06448	V 06510 00100 1
2905		BW	*E8,101	12	06460	V 06479 00101 1
2906		B	MP	7	06472	J 06510
2907		BCE	*E8,100,	12	06479	B 06498 00100
2908		B	MP	7	06491	J 06510
2909		BCE	MQ,101,.	12	06498	B 06536 00101 :
2910	MP	B	TYPCK	7	06510	J 01071
2911		DCW	a#19.26a,G	6	06522	
2912		BBE	MN,TAD1,1	12	06524	W 06418 01001 1
2913	SUB-RTN 19.27	CHECK MRZR				
2914	MQ	CW	100	6	06536	D 00100
2915		MRCW	K03,100	12	06542	D 09749 00100 M
2916		MRZR	K04,100	12	06554	D 09751 00100 #
2917		BW	MR,100	12	06566	V 06628 00100 1
2918		BW	*E8,101	12	06578	V 06597 00101 1
2919		B	MR	7	06590	J 06628
2920		BCE	*E8,100,-	12	06597	B 06616 00100 -
2921		B	MR	7	06609	J 06628
2922		BCE	MS,101,V	12	06616	B 06654 00101 V
2923	MR	B	TYPCK	7	06628	J 01071
2924		DCW	a#19.27a,G	6	06640	
2925		BBE	MQ,TAD1,1	12	06642	W 06536 01001 1
2926	SUB-RTN 19.28	CHECK MRZR				
2927	MS	MLCWA	K05,101	12	06654	D 09754 00101 X
2928		MRZR	K06,100	12	06666	D 09755 00100 ,
2929		BW	*E8,100	12	06678	V 06697 00100 1
2930		B	MT	7	06690	J 06715
2931		C	101,K14E1	11	06697	C 00101 09772

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2932		BE	MU	7	06708	J 06741 S
2933	MT	B	TYPCK	7	06715	J 01071
2934		DCW	a#19.28a,G	6	06727	
2935		BBE	MS,TAD1,1	12	06729	W 06654 01001 1
2936	SUB-RTN 19.29		CHECK MRWR			
2937	MU	MLCWA	K07,101	12	06741	D 09758 00101 X
2938		MRWR	K08,100	12	06753	D 09759 00100 X
2939		BW	MV,100	12	06765	V 06827 00100 1
2940		BW	*E8,101	12	06777	V 06796 00101 1
2941		B	MV	7	06789	J 06827
2942		BCE	*E8,100,I	12	06796	B 06815 00100 1
2943		B	MV	7	06808	J 06827
2944		BCE	MW,101,N	12	06815	B 06853 00101 N
2945	MV	B	TYPCK	7	06827	J 01071
2946		DCW	a#19.29a,G	6	06839	
2947		BBE	MU,TAD1,1	12	06841	W 06741 01001 1
2948	SUB-RTN 19.30		CHECK MRNWR			
2949	MW	MLCWA	K09,101	12	06853	D 09762 00101 X
2950		MRNWR	K10,100	12	06865	D 09763 00100 S
2951		BW	MX,100	12	06877	V 06939 00100 1
2952		BW	*E8,101	12	06889	V 06908 00101 1
2953		B	MX	7	06901	J 06939
2954		BCE	*E8,100,B ^S	12	06908	B 06927 00100 B
2955		B	MX	7	06920	J 06939
2956		BCE	MY,101,.	12	06927	B 06965 00101 .
2957	MX	B	TYPCK	7	06939	J 01071
2958		DCW	a#19.30a,G	6	06951	
2959		BBE	MW,TAD1,1	12	06953	W 06853 01001 1
2960	SUB-RTN 19.31		CHECK MRZWR			
2961	MY	MLCWA	K11,101	12	06965	D 09766 00101 X
2962		MRZWR	K12,100	12	06977	D 09767 00100 S
2963		BW	MZ,100	12	06989	V 07051 00100 1
2964		BW	*E8,101	12	07001	V 07020 00101 1
2965		B	MZ	7	07013	J 07051
2966		BCE	*E8,100,X	12	07020	B 07039 00100 X

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2967		B	MZ	7	07032	J 07051
2968		BCE	NA,101,V	12	07039	B 07077 00101 V
2969	MZ	B	TYPCK	7	07051	J 01071
2970		DCW	a#19.31a,G	6	07063	
2971		BEE	MY,TAD1,1	12	07065	W 06965 01001 1
2972	SUB-RTN 19.32	CHECK	MRCWR			
2973	NA	CH	10C	6	07077	D 00100
2974		MRCW	K13,100	12	07083	D 09769 00100 M
2975		MRCWR	K14,100	12	07095	D 09771 00100 M
2976		BW	*E8,100	12	07107	V 07126 00100 1
2977		B	NB	7	07119	J 07144
2978		C	101,K14E1	11	07126	C 00101 09772
2979		BE	NC	7	07137	J 07170 S
2980	NB	B	TYPCK	7	07144	J 01071
2981		DCW	a#19.32a,G	6	07156	
2982		BEE	NA,TAD1,1	12	07158	W 07077 01001 1
2983	SUB-RTN 19.33	CHECK	SCNLB FOR MOVE NO DATA, PROPER ADDR REG STP			
2984	NC	MLCWS	TPMARK,102	12	07170	D 09914 00102 7
2985		MLCWS	NWM48,103	12	07182	D 09873 00103 7
2986		MLCWS	AMPSND,104	12	07194	D 09896 00104 7
2987		SCNLB	104,103	12	07206	D 00104 00103 -
2988		SAR	HOLDA2	7	07218	G 01020 A
2989		SBR	HOLDB2	7	07225	G 01025 B
2990		C	HOLDA2,a00102a	11	07232	C 01020 09989
2991		BU	ND	7	07243	J 07286 /
2992		C	HOLDB2,a00101a	11	07250	C 01025 09984
2993		BU	ND	7	07261	J 07286 /
2994		C	NWM15,102	11	07268	C 09841 00102
2995		BE	NE	7	07279	J 07312 S
2996	ND	B	TYPCK	7	07286	J 01071
2997		DCW	a#19.33a,G	6	07298	
2998		BEE	NC,TAD1,1	12	07300	W 07170 01001 1
2999	SUB-RTN 19.34	CHECK	MLNB			
3000	NE	MLCWS	BKSLSH,WORK6	12	07312	D 09907 09825 7
3001		MLNB	NWM33,WORK6	12	07324	D 09858 09825 J

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3002		C	NWM17,WORKE	11	07336	C 09843 09825
3003		BE	NF	7	07347	J 07380 S
3004		B	TYPCK	7	07354	J 01071
3005		DCW	@#19.34a,G	6	07366	
3006		B8E	NE,TAD1,1	12	07368	W 07312 01001 1
3007	SUB-RTN 19.35		CHECK MLZB			
3008	NF	SW	10C	6	07380	, 00100
3009		MLCWS	NWM63,101	12	07386	D 09888 00101 7
3010		MLZB	BLANK,101	12	07398	D 09890 00101 K
3011		BW	*£13,101	12	07410	V 07434 00101 1
3012		BCE	NG,101,M	12	07422	B 07460 00101 M
3013		B	TYPCK	7	07434	J 01071
3014		DCW	@#19.35a,G	6	07446	
3015		B8E	NF,TAD1,1	12	07448	W 07380 01001 1
3016	SUB-RTN 19.36		CHECK MLCB			
3017	NG	SW	10C	6	07460	, 00100
3018		MLCWS	NWM52,101	12	07466	D 09877 00101 7
3019		MLCB	POUND,101	12	07478	D 09910 00101 L
3020		BW	*£13,101	12	07490	V 07514 00101 1
3021		BCE	NH,101,#	12	07502	B 07540 00101 #
3022		B	TYPCK	7	07514	J 01071
3023		DCW	@#19.36a,G	6	07526	
3024		B8E	NG,TAD1,1	12	07528	W 07460 01001 1
3025	SUB-RTN 19.37		CHECK MLWB			
3026	NH	SW	10C	6	07540	, 00100
3027		MLCWS	NWM15,101	12	07546	D 09841 00101 7
3028		MLWB	AMPSND,101	12	07558	D 09896 00101 M
3029		C	NWM15,101	11	07570	C 09841 00101
3030		BE	NI	7	07581	J 07614 S
3031		B	TYPCK	7	07588	J 01071
3032		DCW	@#19.37a,G	6	07600	
3033		B8E	NH,TAD1,1	12	07602	W 07540 01001 1
3034	SUB-RTN 19.38		CHECK MLNWB			
3035	NI	SW	10C	6	07614	, 00100
3036		MLCWS	NWM06,101	12	07620	D 09832 00101 7

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3037		MLNWB	EYE,101	12	07632	D 09924 00101 N
3038		C	NWM09,101	11	07644	C 09835 00101
3039		BE	NJ	7	07655	J 07688 S
3040		B	TYPCK	7	07662	J 01071
3041		DCW	a#19.38a,G	6	07674	
3042		BBE	NI,TAD1,1	12	07676	W 07614 01001 1
3043	SUB-RTN 19.39	CHECK	MLZWB			
3044	NJ	MLCWS	ALLBIT,WORK6	12	07688	D 09895 09825 7
3045		MLZWB	NWM00,WORK6	12	07700	D 09826 09825 0
3046		BW	*E13,WORK6	12	07712	V 07736 09825 1
3047		BCE	NK,WORK6,M	12	07724	B 07762 09825 M
3048		B	TYPCK	7	07736	J 01071
3049		DCW	a#19.39a,G	6	07748	
3050		BBE	NJ,TAD1,1	12	07750	W 07688 01001 1
3051	SUB-RTN 19.40	CHECK	MLCWB			
3052	NK	MLCWS	LOZNGE,WORK6	12	07762	D 09892 09825 7
3053		MLCWB	NWM03,WORK6	12	07774	D 09829 09825 P
3054		BW	*E13,WORK6	12	07786	V 07810 09825 1
3055		BCE	NL,WORK6,3	12	07798	B 07836 09825 3
3056		B	TYPCK	7	07810	J 01071
3057		DCW	a#19.40a,G	6	07822	
3058		BBE	NK,TAD1,1	12	07824	W 07762 01001 1
3059	SUB-RTN 19.41	CHECK	SCNRG FOR MOVE NO DATA, PROPER ADDR REG STP			
3060	NL	CS	164	6	07836	/ 00164
3061		MLCWS	ALLBIT,101	12	07842	D 09895 00101 7
3062		MLWA	164,100	12	07854	D 00164 00100 U
3063		MLCWB	NINE,100	12	07866	D 09953 00100 P
3064		CW	42	6	07878	0 00042
3065		SCNRG	37,36	12	07884	D 00037 00036 Q
3066		SAR	HOLDA2	7	07896	G 01020 A
3067		SBR	HOLDB2	7	07903	G 01025 B
3068		C	HOLDA2,a00102a	11	07910	C 01020 09989
3069		BU	NM	7	07921	J 08000 /
3070		C	HOLDB2,a00101a	11	07928	C 01025 09984
3071		BU	NM	7	07939	J 08000 /

SHOULD BRANCH

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INSURE 00100-00164 BLANK

PUT TERMINAL CHARACTER IN 00101

INSURE NO WMS 00038-00100

MOVE 64 CHARACTERS TO 00037-00100

REMOVE WM FROM GROUP MARK

TRY THE SCAN

CHECK AAR FOR PROPER SETTING

SHOULD NOT BRANCH

CHECK BAR FOR PROPER SETTING

SHOULD NOT BRANCH

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3072		BW	NM,42	12	07946	V 08000 00042 1
3073		MLWA	164,100	12	07958	D 00164 00100 U
3074		MLCB	NINE,164	12	07970	D 09953 00164 L
3075		C	100,164	11	07982	C 00100 00164
3076		BE	NN	7	07993	J 08026 S
3077	NM	B	TYPCK	7	08000	J 01071
3078		DCW	a#19.41a,G	6	08012	
3079		BBE	NL,TAD1,1	12	08014	W 07836 01001 1
3080	SUB-RTN 19.42	CHECK MRNG				
3081	NN	MLCWS	NWM19,101	12	08026	D 09845 00101 7
3082		MLCWS	SPLAT,102	12	08038	D 09898 00102 7
3083		MLCWS	ALLBIT,103	12	08050	D 09895 00103 7
3084		MRNG	102,101	12	08062	D 00102 00101 R
3085		BW	*E13,101	12	08074	V 08098 00101 1
3086		BCE	NP,101,2	12	08086	B 08124 00101 2
3087		B	TYPCK	7	08098	J 01071
3088		DCW	a#19.42a,G	6	08110	
3089		BBE	NN,TAD1,1	12	08112	W 08026 01001 1
3090	SUB-RTN 19.43	CHECK MRZG				
3091	NP	MLCWS	ALLBIT,101	12	08124	D 09895 00101 7
3092		MLCWS	NWM00,102	12	08136	D 09826 00102 7
3093		MLCWS	ALLBIT,103	12	08148	D 09895 00103 7
3094		MRZG	102,101	12	08160	D 00102 00101 ;
3095		C	NWM15,101	11	08172	C 09841 00101
3096		BE	NQ	7	08183	J 08216 S
3097		B	TYPCK	7	08190	J 01071
3098		DCW	a#19.43a,G	6	08202	
3099		BBE	NP,TAD1,1	12	08204	W 08124 01001 1
3100	SUB-RTN 19.44	CHECK MRCC				
3101	NQ	MLCWS	AITCH,101	12	08216	D 09923 00101 7
3102		MLCWS	NWM07,102	12	08228	D 09833 00102 7
3103		MLCWS	ALLBIT,103	12	08240	D 09895 00103 7
3104		MRCC	102,101	12	08252	D 00102 00101 S
3105		C	NWM07,101	11	08264	C 09833 00101
3106		BE	NR	7	08275	J 08308 S

SHOULD BRANCH

C02CB-2 1410 CPU ERROR DETECTION

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3107		B	TYPCK	7	08282	J 01071
3108		DCW	a#19.44a,G	6	08294	
3109		BBE	NQ,TAD1,1	12	08296	W 08216 01001 1
3110	SUB-RTN 19.45		CHECK MRWG			
3111	NR	MLCWS	DELTA,101	12	08308	D 09901 00101 7
3112		MLCWS	NWM16,102	12	08320	D 09842 00102 7
3113		MLCWS	ALLBIT,103	12	08332	D 09895 00103 7
3114		MRWG	102,101	12	08344	D 00102 00101 *
3115		BW	*613,101	12	08356	V 08380 00101 1
3116		BCE	NS,101,L	12	08368	B 08406 00101 L
3117		B	TYPCK	7	08380	J 01071
3118		DCW	a#19.45a,G	6	08392	
3119		BBE	NR,TAD1,1	12	08394	W 08308 01001 1
3120	SUB-RTN 19.46		CHECK MRNWG			
3121	NS	MLCWS	EXCLAM,101	12	08406	D 09925 00101 7
3122		MLCWS	NWM21,102	12	08418	D 09847 00102 7
3123		MLCWS	ALLBIT,103	12	08430	D 09895 00103 7
3124		MRNWG	102,101	12	08442	D 00102 00101 B
3125		BW	*613,101	12	08454	V 08478 00101 1
3126		BCE	NT,101,N	12	08466	B 08504 00101 N
3127		B	TYPCK	7	08478	J 01071
3128		DCW	a#19.46a,G	6	08490	
3129		BBE	NS,TAD1,1	12	08492	W 08406 01001 1
3130	SUB-RTN 19.47		CHECK MRZWG			
3131	NT	MLCWS	NWM63,101	12	08504	D 09888 00101 7
3132		MLCWS	BLANK,102	12	08516	D 09890 00102 7
3133		MLCWS	ALLBIT,103	12	08528	D 09895 00103 7
3134		MRZWG	102,101	12	08540	D 00102 00101 ;
3135		C	NWM15,101	11	08552	C 09841 00101
3136		BE	NU	7	08563	J 08596 S
3137		B	TYPCK	7	08570	J 01071
3138		DCW	a#19.47a,G	6	08582	
3139		BBE	NT,TAD1,1	12	08584	W 08504 01001 1
3140	SUB-RTN 19.48		CHECK MRCWG			
3141	NU	MLCWS	NWM48,101	12	08596	D 09873 00101 7

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3142		MLCWS	TPMARK,102	12	08608	D 09914 00102 7
3143		MLCWS	ALLBIT,103	12	08620	D 09895 00103 7
3144		MRCWG	102,101	12	08632	D 00102 00101 L
3145		C	NWM15,101	11	08644	C 09841 00101
3146		BE	NV	7	08655	J 08688 S
3147		B	TYPCK	7	08662	J 01071
3148		DCW	a#19.48a,G	6	08674	
3149		BBE	NV,TAD1,1	12	08676	W 08596 01001 1
3150	SUB-RTN 19.49		CHECK SCNL FOR MOVE NO DATA, PROPER ADDR REG STEP			
3151	NV	MLCWS	JAY,102	12	08688	D 09926 00102 7
3152		MLCWS	NWM30,103	12	08700	D 09855 00103 7
3153		SCNL	102,103	12	08712	D 00102 00103 E
3154		SAR	HOLDA2	7	08724	G 01020 A
3155		SBR	HOLDB2	7	08731	G 01025 B
3156		C	HOLDA2,a00101a	11	08738	C 01020 09984
3157		BU	NW	7	08749	J 08867 /
3158		C	HOLDB2,a00102a	11	08756	C 01025 09989
3159		BU	NW	7	08767	J 08867 /
3160		BW	NW,103	12	08774	V 08867 00103 1
3161		BCE	*E8,103,S	12	08786	B 08805 00103 S
3162		B	NW	7	08798	J 08867
3163		SCNL	103,102	12	08805	D 00103 00102 E
3164		SAR	HOLDA2	7	08817	G 01020 A
3165		SBR	HOLDB2	7	08824	G 01025 B
3166		C	HOLDA2,a00102a	11	08831	C 01020 09989
3167		BU	NW	7	08842	J 08867 /
3168		C	HOLDB2,a00101a	11	08849	C 01025 09984
3169		BE	NX	7	08860	J 08893 S
3170	NW	B	TYPCK	7	08867	J 01071
3171		DCW	a#19.49a,G	6	08879	
3172		BBE	NV,TAD1,1	12	08881	W 08688 01001 1
3173	SUB-RTN 19.50		CHECK MLN			
3174	NX	MLCWS	NWM63,WORK6	12	08893	D 09888 09825 7
3175		MLN	BLANK,WORK6	12	08905	D 09890 09825 A
3176		BW	*E13,WORK6	12	08917	V 08941 09825 1

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TEST STOP ON B-FIELD WM

SHOULD BRANCH

SHOULD NOT BRANCH WORD MARK

SHOULD NOT BRANCH

CHECK BAR FOR PROPER STEPPING

SHOULD NOT BRANCH

CHECK AAR FOR PROPER STEPPING

TEST STOP ON A-FIELD WM

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3177		BCE	NY,WORK6,E	12	08929	B 08967 09825 E
3178		B	TYPCK	7	08941	J 01071
3179		DCW	a#19.50a,G	6	08953	
3180		BBE	NX,TAD1,1	12	08955	W 08893 01001 1
3181	SUB-RTN 19.51		CHECK MLZ			
3182	NY	MLCWS	NWM51,WORK6	12	08967	D 09876 09825 7
3183		MLZ	ATSIGN,WORK6	12	08979	D 09911 09825 B
3184		BW	*E13,WORK6	12	08991	V 09015 09825 1
3185		BCE	NZ,WORK6,3	12	09003	B 09041 09825 3
3186		B	TYPCK	7	09015	J 01071
3187		DCW	a#19.51a,G	6	09027	
3188		BBE	NY,TAD1,1	12	09029	W 08967 01001 1
3189	SUB-RTN 19.52		CHECK MLC			
3190	NZ	MLCWS	NWM31,WORK6	12	09041	D 09856 09825 7
3191		MLC	DASH,WORK6	12	09053	D 09902 09825 C
3192		BW	*E13,WORK6	12	09065	V 09089 09825 1
3193		BCE	PA,WORK6,-	12	09077	B 09115 09825 -
3194		B	TYPCK	7	09089	J 01071
3195		DCW	a#19.52a,G	6	09101	
3196		BBE	NZ,TAD1,1	12	09103	W 09041 01001 1
3197	SUB-RTN 19.53		CHECK MLW			
3198	PA	MLCWS	NWM09,WORK6	12	09115	D 09835 09825 7
3199		MLW	EFF,WORK6	12	09127	D 09921 09825 D
3200		C	NWM09,WORK6	11	09139	C 09835 09825
3201		BE	PB	7	09150	J 09183 S
3202		B	TYPCK	7	09157	J 01071
3203		DCW	a#19.53a,G	6	09169	
3204		BBE	PA,TAD1,1	12	09171	W 09115 01001 1
3205	SUB-RTN 19.54		CHECK MLNW			
3206	PB	MLCWS	ALLBIT,WORK6	12	09183	D 09895 09825 7
3207		MLNW	NWM00,WORK6	12	09195	D 09826 09825 E
3208		BW	*E13,WORK6	12	09207	V 09231 09825 1
3209		BCE	PC,WORK6,E	12	09219	B 09257 09825 E
3210		B	TYPCK	7	09231	J 01071
3211		DCW	a#19.54a,G	6	09243	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3212		BBE	P8,TAD1,1	12	09245	W 09183 01001 1
3213	SUB-RTN 19.55		CHECK MLZW			
3214	PC	MLCWS	PERIOD,WORK6	12	09257	D 09891 09825 7
3215		MLZW	NWM04,WORK6	12	09269	D 09830 09825 F
3216		BW	*&13,WORK6	12	09281	V 09305 09825 1
3217		BCE	PD,WORK6,#	12	09293	B 09331 09825 #
3218		B	TYPCK	7	09305	J 01071
3219		DCW	a#19.55a,G	6	09317	
3220		BBE	PC,TAD1,1	12	09319	W 09257 01001 1
3221	SUB-RTN 19.56		CHECK MLCW			
3222	PD	MLCWS	DELTA,WORK6	12	09331	D 09901 09825 7
3223		MLCW	NWM16,WORK6	12	09343	D 09842 09825 G
3224		BW	*&13,WORK6	12	09355	V 09379 09825 1
3225		BCE	PE,WORK6,B	12	09367	B 09405 09825 B
3226		B	TYPCK	7	09379	J 01071
3227		DCW	a#19.56a,G	6	09391	
3228		BBE	PD,TAD1,1	12	09393	W 09331 01001 1
3229	SUB-RTN 19.57		CHECK SCNRM FOR MOVE NO DATA, PROPER ADDR REG STP			
3230	PE	CS	165	6	09405	/ 00165
3231		SW	102	6	09411	, 00102
3232		MLCB	NWM26,165	12	09417	D 09889 00165 L
3233		MLCWA	165,101	12	09429	D 00165 00101 X
3234		MLWB	SEVEN,99	12	09441	D 09951 00099 M
3235		SCNRM	38,37	12	09453	D 00038 00037 H
3236		SAR	HOLDA2	7	09465	G 01020 A
3237		SBR	HOLDB2	7	09472	G 01025 B
3238		C	HOLDA2,a00102a	11	09479	C 01020 09989
3239		BU	PF	7	09490	J 09619 /
3240		C	HOLDB2,a00101a	11	09497	C 01025 09984
3241		BU	PF	7	09508	J 09619 /
3242		MLWA	163,99	12	09515	D 00163 00099 U
3243		C	101,165	11	09527	C 00101 00165
3244		BU	PF	7	09538	J 09619 /
3245		MLCWS	ALLBIT,101	12	09545	D 09895 00101 7
3246		SCNRM	38,37	12	09557	D 00038 00037 H
			TRY SCAN W/RM REPLACED BY GMWM			

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3247		SAR	HOLDA2	7	09569	G 01020 A
3248		SBR	HOLDB2	7	09576	G 01025 B
3249		C	HOLDA2,200102a	11	09583	C 01020 09989
3250		BU	PF	7	09594	J 09619 /
3251		C	HOLDB2,200101a	11	09601	C 01025 09984
3252		BE	PG	7	09612	J 09645 S
3253	PF	B	TYPCK	7	09619	J 01071
3254		DCW	a#19.57a,G	6	09631	
3255		B8E	PE,TAD1,1	12	09633	W 09405 01001 1
3256	SUB-RTN 19.58	CHECK	MRNM			
3257	PG	MLCWS	ALLBIT,100	12	09645	D 09895 00100 7
3258		MLCWS	NWM00,101	12	09657	D 09826 00101 7
3259		MLCWS	RCDMRK,102	12	09669	D 09935 00102 7
3260		MRNM	101,100	12	09681	D 00101 00100 1
3261		C	NWM48,100	11	09693	C 09873 00100
3262		BE	PH	7	09704	J 01289 S
3263		B	TYPCK	7	09711	J 01071
3264		DCW	a#19.58a,G	6	09723	
3265		B8E	PG,TAD1,1	12	09725	W 09645 01001 1
3266		B	PH	7	09737	J 01289
3267		H		1	09744	.
3268	ENDPH2	EQU	*			
3269	SUB-RTN 19.59	CHECK	MRZM			
3270		ORG	LOWLOC		01289	
3271	PH	MLCWS	GEE,100	12	01289	D 09922 00100 7
3272		MLCWS	NWM08,101	12	01301	D 09834 00101 7
3273		MLCWS	ALLBIT,102	12	01313	D 09895 00102 7
3274		MRZM	101,100	12	01325	D 00101 00100 M
3275		C	NWM07,100	11	01337	C 09833 00100
3276		BE	PI	7	01348	J 01381 S
3277		B	TYPCK	7	01355	J 01071
3278		DCW	a#19.59a,G	6	01367	
3279		B8E	PH,TAD1,1	12	01369	W 01289 01001 1
3280	SUB-RTN 19.60	CHECK	MRCM			
3281	PI	MLCWS	TPMARK,100	12	01381	D 09914 00100 7

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** ALL #19.57 ERRORS COME HERE

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BACK TO LOWEST AVAILABLE LOCATION

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3282		MLCWS	NWM48,101	12	01393	D 09873 00101 7
3283		MLCWS	RCCMRK,102	12	01405	D 09935 00102 7
3284		MRCM	101,100	12	01417	D 00101 00100 .
3285		C	NWM48,100	11	01429	C 09873 00100
3286		BE	PJ	7	01440	J 01473 S
3287		B	TPCK	7	01447	J 01071
3288		DCW	a#19.60a,G	6	01459	
3289		B8E	PI,TAD1,1	12	01461	W 01381 01001 1
3290	SUB-RTN 19.61	CHECK MRWM				
3291	PJ	MLCWS	RBRKT,100	12	01473	D 09899 00100 7
3292		MLCWS	NWM18,101	12	01485	D 09844 00101 7
3293		MLCWS	ALLBIT,102	12	01497	D 09895 00102 7
3294		MRWM	101,100	12	01509	D 00101 00100 B
3295		BW	*a13,100 ^R	12	01521	V 01545 00100 1
3296		BCE	PK,100,B	12	01533	B 01571 00100 B
3297		B	TPCK	7	01545	J 01071
3298		DCW	a#19.61a,G	6	01557	
3299		B8E	PJ,TAD1,1	12	01559	W 01473 01001 1
3300	SUB-RTN 19.62	CHECK MRNWM				
3301	PK	MLCWS	NWM63,100	12	01571	D 09888 00100 7
3302		MLCWS	BLANK,101	12	01583	D 09890 00101 7
3303		MLCWS	RCCMRK,102	12	01595	D 09935 00102 7
3304		MRNWM	101,100	12	01607	D 00101 00100 B
3305		C	NWM48,100	11	01619	C 09873 00100
3306		BE	PL	7	01630	J 01663 S
3307		B	TPCK	7	01637	J 01071
3308		DCW	a#19.62a,G	6	01649	
3309		B8E	PK,TAD1,1	12	01651	W 01571 01001 1
3310	SUB-RTN 19.63	CHECK MRZWM				
3311	PL	MLCWS	NWM62,100	12	01663	D 09887 00100 7
3312		MLCWS	ONE,101	12	01675	D 09945 00101 7
3313		MLCWS	ALLBIT,102	12	01687	D 09895 00102 7
3314		MRZWM	101,100	12	01699	D 00101 00100 T
3315		C	NWM14,100	11	01711	C 09840 00100
3316		BE	PM	7	01722	J 01755 S

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C0208-2 1410 CPU ERROR DETECTION

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3317		B	TYPCK	7	01729	J 01071
3318		DCW	a#19.63a,G	6	01741	
3319		B8E	PL,TAD1,1	12	01743	W 01663 01001 1
3320	SUB-RTN	19.64	CHECK MRCWM			
3321	PM	MLCWS	NWM15,100	12	01755	D 09841 00100 7
3322		MLCWS	AMPSND,101	12	01767	D 09896 00101 7
3323		MLCWS	RCDMRK,102	12	01779	D 09935 00102 7
3324		MRCWM	101,100	12	01791	D 00101 00100 M
3325		C	NWM48,100	11	01803	C 09873 00100
3326		BE	PV	7	01814	J 01847 S
3327		B	TYPCK	7	01821	J 01071
3328		DCW	a#19.64a,G	6	01833	
3329		B8E	PM,TAD1,1	12	01835	W 01755 01001 1

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3331			COUNT PASSES, ALLOW FOR PROGRAM MODIFICATION			
3332						
3333	PV	BNQ	INC	7	01847	J 01157 Q
3334	PW	S	£1,PCCWK	11	01854	S 09954 01015
3335		BZ	*£8	7	01865	J 01879 V
3336		B	START	7	01872	J 02000
3337		BBE	PW02,TAD3,1	12	01879	W 01936 01003 I
3338		B	TYPE	7	01891	J 01026
3339		DCW	a-PASS-a,G	6	01903	
3340	PW01	CS	204	6	01905	/ 00204
3341		SW	200	6	01911	, 00200
3342		MLCWB	1004,204	12	01917	D 01004 00204 P
3343		B	LOADER	7	01929	J 00400
3344	PW02	BW	PW01,999	12	01936	V 01905 00999 I
3345						
3346	REDO	CW	KA£1,KX£1	11	01948	¤ 02100 03268
3347		B	START	7	01959	J 02000
3348		H		1	01966	.

.
. SAVE TADS FOR NEXT PHASE
. EXIT C020B-2 HERE
BRANCH IF INPUT WAS FROM TAPE

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

CONSTANTS AND WORK AREAS

3350				09745	
3351		ORG	ENDPH2		
3352	K01	DC	aMa	1 09745	
3353		DCW	aNa	1 09746	
3354	K02		aEt+a	2 09747	
3355	K03	DC	aBa	1 09749	
3356		DCW	aNa	1 09750	
3357	K04		aL+a	2 09751	
3358	K05		aMNa	2 09754	
3359	K06	DC	a a	1 09755	
3360		DCW	a+a	1 09756	
3361	K07		aINa	2 09758	
3362	K08	DC	a6a	1 09759	
3363		DCW	a+a	1 09760	
3364	K09		aMNa	2 09762	
3365	K10	DC	a-a	1 09763	
3366		DCW	a+a	1 09764	
3367	K11		aPNa	2 09766	
3368	K12	DC	aYa	1 09767	
3369		DCW	a+a	1 09768	
3370	K13	DC	aMa	1 09769	
3371		DCW	aNa	1 09770	
3372	K14		a+a	2 09771	
3373					
3374	CNEHTH	DCW	81C0000	6 09778	
3375	AADDR1		FIELD1-3	5 09783	09799
3376	BADDR1		FIELD2-3	5 09788	09802
3377	AADDR2		FIELD3-3	5 09793	09805
3378	BADDR2		FIELD4-3	5 09798	09809
3379	FIELD1		a9M8Ga	4 09802	
3380	FIELD2		a9SGa	3 09805	
3381	FIELD3		a,IGa	3 09808	
3382	FIELD4		a / .Ga	4 09812	
3383	LIMIT		a a	4 09816	
3384	FIRSTI		a a	2 09818	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3385	LOSTRT		a a	2	09820	
3386	FICNT		a a	2	09822	
3387	LOCNT		a a	2	09824	
3388	WORK6		a a	1	09825	
3389						
3390	NWM00	DC	a a	1	09826	
3391	NWM01		a1a	1	09827	
3392	NWM02		a2a	1	09828	
3393	NWM03		a3a	1	09829	
3394	NWM04		a4a	1	09830	
3395	NWM05		a5a	1	09831	
3396	NWM06		a6a	1	09832	
3397	NWM07		a7a	1	09833	
3398	NWM08		a8a	1	09834	
3399	NWM09		a9a	1	09835	
3400	NWM10		a0a	1	09836	
3401	NWM11		a#a	1	09837	
3402	NWM12		aaa	1	09838	
3403	NWM13		a;a	1	09839	
3404	NWM14		aTa	1	09840	
3405	NWM15		aMa	1	09841	
3406	NWM16		aBa	1	09842	
3407	NWM17		a/a	1	09843	
3408	NWM18		aSa	1	09844	
3409	NWM19		aTa	1	09845	
3410	NWM20		aUa	1	09846	
3411	NWM21		aVa	1	09847	
3412	NWM22		aWa	1	09848	
3413	NWM23		aXa	1	09849	
3414	NWM24		aYa	1	09850	
3415	NWM25		aZa	1	09851	
3416	NWM27		a,a	1	09852	
3417	NWM28		a;a	1	09853	
3418	NWM29		aSa	1	09854	
3419	NWM30		aBa	1	09855	

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

3420	NWM31		S aMa
3421	NWM32		a-a
3422	NWM33		aJa
3423	NWM34		aKa
3424	NWM35		aLa
3425	NWM36		aMa
3426	NWM37		aNa
3427	NWM38		aOa
3428	NWM39		aPa
3429	NWM40		aQa
3430	NWM41		aRa
3431	NWM42		aSa
3432	NWM43		aT _a
3433	NWM44		aU _a
3434	NWM45		aV _a
3435	NWM46		aW _a
3436	NWM47		aX _a
3437	NWM48		aYa
3438	NWM49		aZa
3439	NWM50		aAa
3440	NWM51		aB _a
3441	NWM52		aCa
3442	NWM53		aDa
3443	NWM54		aEa
3444	NWM55		aFa
3445	NWM56		aGa
3446	NWM57		aHa
3447	NWM58		aI _a
3448	NWM59		aJ _a
3449	NWM60		aKa
3450	NWM61		aLa
3451	NWM62		aMa
3452	NWM63		aNa
3453	NWM64		aOa
3454	NWM65		aPa

C020B INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS
3455	TABLE	DCW	a a	1	09890
3456	PERICD		a. a	1	09891
3457	LOZNGE		aa L	1	09892
3458	LBRAKT		aa L	1	09893
3459	LESS		aT a	1	09894
3460	ALLBIT		aG a	1	09895
3461	AMPSND		aa a	1	09896
3462			aa a	1	09897
3463	SPLAT		a* a	1	09898
3464	RBRAKT		aa R	1	09899
3465			a. a	1	09900
3466	DELTA		aD a	1	09901
3467	CASH		a- a	1	09902
3468			a/ a	1	09903
3469	COMMA		a. a	1	09904
3470	PERCNT		aa W	1	09905
3471	NDSEP	DC	aa B	1	09906
3472	BKSLSH	DCW	aa S	1	09907
3473	SEGRK		aa S	1	09908
3474	SUBLNK		aa S	1	09909
3475	POUND		aa a	1	09910
3476	ATSIGN		aa a	1	09911
3477	COLON		a. a	1	09912
3478	GREATR		aT a	1	09913
3479	TPMARK		aa T	1	09914
3480	QUESTN		aa Q	1	09915
3481	AYE		aa a	1	09916
3482	BEE		aa a	1	09917
3483	SEE		aa a	1	09918
3484	DEE		aa a	1	09919
3485	EEE		aa a	1	09920
3486	EFF		aa a	1	09921
3487	GEE		aa a	1	09922
3488	AITCH		aa a	1	09923
3489	EYE		aI a	1	09924

CT ADDR INSTRUCTION

PGLIN LABEL OPCODE OPERAND

3490	EXCLAM		a'a	1	09925	
3491	JAY		aJa	1	09926	
3492			aKa	1	09927	
3493	ELL		aLa	1	09928	
3494	EMM		aMa	1	09929	
3495			aNa	1	09930	
3496	CH		aOa	1	09931	
3497	PEA		aPa	1	09932	
3498	QUEUE		aQa	1	09933	
3499	ARE		aRa	1	09934	
3500	RCDMRK		a#a	1	09935	
3501	ESS		aSa	1	09936	
3502	TEA		aTa	1	09937	
3503			aUa	1	09938	
3504	VEE		aVa	1	09939	
3505	DBLYOU		aWa	1	09940	
3506	EKS		aXa	1	09941	
3507	WYE		aYa	1	09942	
3508	ZEE		aZa	1	09943	
3509	NAUGHT		aOa	1	09944	
3510	CNE		a1a	1	09945	
3511	TWC		a2a	1	09946	
3512	THREE		a3a	1	09947	
3513	FOUR		a4a	1	09948	
3514	FIVE		a5a	1	09949	
3515	SIX		a6a	1	09950	
3516	SEVEN		a7a	1	09951	
3517	EIGHT		a8a	1	09952	
3518	NINE		a9a	1	09953	
3519						
3520		LTORG *			09954	
3520		£1		1	09954	
3520		£99999		5	09959	
3520		KFC2		5	09964	02382
3520		POUND		5	09969	09910

3520	KFC7	5	09974	02486
3520	KFC6	5	09979	02479
3520	2001012	5	09984	
3520	2001022	5	09989	
3520	£4096	4	09993	
3520	£64	2	09995	
3520	£63	2	09997	

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3522	DIVSR	EQU	WORK7			
3523	DIVDND	EQU	WORK8			
3524	QUOREM	EQU	P1			
3525	QUOTNT	EQU	WORK10			
3526						
3527		ORG	1000		01000	
3528						
3529		DC	a a,6	5	01004	
3530						
3531		DCW	£00100	5	01010	PASS COUNT CONSTANT
3532			a a	5	01015	PASS COUNT WORK AREA
3533						
3534			a a	5	01020	. COMMON AREA FOR STORING
3535			a a	5	01025	. ADDRESS REGISTERS
3536						
3537		SBR	*£9	7	01026	G 01041 B
3538		WCP	0	10	01033	M £10 00000 W
3539		SBR	*£20	7	01043	G 01069 B
3540		BCB1	*-23	7	01050	R 01033 2
3541		BA1	*£1	7	01057	R 01064 M
3542		B	0	7	01064	J 00000
3543						
3544		SBR	*£39	7	01071	G 01116 B
3545		SBR	*£65	7	01078	G 01149 B
3546		A	*-17,*£54	11	01085	A 01078 01149
3547		B8E	*£25,TAD0,1	12	01096	W 01132 01000 1
3548		WCP	0	10	01108	M £10 00000 W
3549		BCB1	*-16	7	01118	R 01108 2
3550		BA1	*£1	7	01125	R 01132 M
3551		B8E	*£8,TAD2,1	12	01132	W 01151 01002 1
3552		B	0	7	01144	J 00000
3553		H	*-12	6	01151	. 01144

PGLIN	LABEL	OPCOD	OPERAND	COMMON ADDRESS ALTER ROUTINE	CT	ADDRS	INSTRUCTION
3555		RCP	*E26		10	01157	M ZTO 01192 R
3556		BNTI	*E39		7	01167	R 01212 S
3557		BEXI	*-23,M		7	01174	R 01157 T
3558		BAI	*E1		7	01181	R 01188 M
3559		RCPW	0		10	01188	L ZTO 00000 R
3560		BEXI	*-16,M		7	01198	R 01188 S
3561		BAI	*E1		7	01205	R 01212 G
3562		B	TQ2		7	01212	J 01818
3563		DCW	AMa		1	01219	
3564							
3565		ORG	CTLIND			01230	
3566		DC	a		9	01238	
3567		DCW	a1.12.101LCZa	1CK OR 20K, SEQ NO. 013, DUMP TO 09999 ON TAPE	11	01249	
3568							
3569		ORG	IDENT			01250	
3570		DCW	aC0208a.G		5	01254	
3571							
3572		ORG	SYSCIL			01256	
3573		DC	a		33	01288	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3575		ORG	START		02000	
3576						
3577			TYPE IDENT, INITIALIZE LOCATIONS 00001-00008 FOR			
3578			RESTART, INITIALIZE PASS COUNTER, RESTORE TADS			
3579						
3580		NOPWM		1	02000	N
3581		B	QA	7	02001	J 02066
3582		SW	*-12	6	02008	, 02001
3583		B	TYPE	7	02014	J 01026
3584		DCW	a C020B-3a,G	8	02028	
3585		CS	1004	6	02030	/ 01004
3586		SW	1000	6	02036	, 01000
3587		MLCWB	204,1004	12	02042	D 00204 01004 P S
3588		MRCWR	K15,1	12	02054	D 09419 00001 M
3589	CA	NOPWM		1	02066	N
3590		B	QB	7	02067	J 02091
3591		SW	*-12	6	02074	, 02067
3592		ZA	PCC,PCCWK	11	02080	M 01010 01015

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3594	ROUTINE	21.00	ADDITIONAL COMPARE TEST			
3595						
3596	SUB-RTN	21.01	PERFORM COMPLICATED COMPARE			
3597	QB	C	CCON1,CCON2	11	02091	C 09244 09245
3598		BH	*E8	7	02102	J 02116 U
3599		B	QC	7	02109	J 02134
3600		C	CCON2,CCON1	11	02116	C 09245 09244
3601		BL	QG	7	02127	J 02160 T
3602	CC	B	TYPCK	7	02134	J 01071
3603		DCW	a#21.01a,G	6	02146	
3604		BBE	QB,TAD1,1	12	02148	W 02091 01001 1

PGLIN	LABEL	OPCOD	OPERANC	CT	ADRS	INSTRUCTION
3606	ROUTINE 22.00	TEST	TABLE LOOK-UP INSTRUCTION			
3607						
3608	SUB-RTN 22.01	TEST	LOOK UP TO END OF TABLE			
3609	CG	LND	ENCITM,ENDTBL	12	02160	T 08975 09042
3610		SAR	HOLDA3	7	02172	G 01020 A
3611		SBR	HOLDB3	7	02179	G 01025 B
3612		BE	QH	7	02186	J 02250 S
3613		BL	QH	7	02193	J 02250 T
3614		BH	*E8	7	02200	J 02214 U
3615						
3616		B	QH	7	02207	J 02250
3617		C	HOLDA3,ENDA	11	02214	C 01020 08973
3618		BU	QH	7	02225	J 02250 /
3619		C	HOLDB3,&ENCITM	11	02232	C 01025 09707
3620		BE	QI	7	02243	J 02276 S
3621	CH	B	TYPCK	7	02250	J 01071
3622		DCW	@#22.01@,G	6	02262	
3623		BBE	QG,TAD1,1	12	02264	W 02160 01001 1
3624	SUB-RTN 22.02	TEST	LOOK UP LOW			
3625	CI	LL	T01,LTBL	12	02276	T 09049 09059 1
3626		SAR	HOLDA3	7	02288	G 01020 A
3627		SBR	HOLDB3	7	02295	G 01025 B
3628		BL	*E8	7	02302	J 02316 T
3629		B	QI1	7	02309	J 02359
3630		C	HOLDA3,LLCON	11	02316	C 01020 09047
3631		BE	*E8	7	02327	J 02341 S
3632		B	QI1	7	02334	J 02359
3633		C	HOLDB3,&LSIP	11	02341	C 01025 09712
3634		BE	QJ	7	02352	J 02385 S
3635	CI1	B	TYPCK	7	02359	J 01071
3636		DCW	@#22.02@,G	6	02371	
3637		BBE	QI,TAD1,1	12	02373	W 02276 01001 1
3638	SUB-RTN 22.03	TEST	LOOK UP EQUAL			
3639	CJ	LE	T02,ETBL	12	02385	T 09061 09071 2
3640		SBR	HOLDB3	7	02397	G 01025 B

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3641		BU	*E19	7	02404	J 02429 /
3642		C	HOLDB3,&ESTP	11	02411	C 01025 09717
3643		BE	QK	7	02422	J 02455 S
3644		B	TYPCK	7	02429	J 01071
3645		DCW	a#22.03a,G	6	02441	
3646		BBE	QJ,IAD1,1	12	02443	W 02385 01001 1
3647	SUB-RTN 22.04		TEST LOOK UP LOW OR EQUAL, STOP ON LOW			
3648	CK	LLE	T03,LETBL1	12	02455	T 09073 09080 3
3649		SBR	HOLDB3	7	02467	G 01025 B
3650		BL	*E8	7	02474	J 02488 T
3651		B	*E19	7	02481	J 02506
3652		C	HOLDB3,&LESTP1	11	02488	C 01025 09722
3653		BE	QL	7	02499	J 02532 S
3654		B	TYPCK	7	02506	J 01071
3655		DCW	a#22.04a,G	6	02518	
3656		BBE	QK,IAD1,1	12	02520	W 02455 01001 1
3657	SUB-RTN 22.05		TEST LOOK UP LOW OR EQUAL, STOP ON EQUAL			
3658	CL	LLE	T03,LETBL2	12	02532	T 09073 09087 3
3659		SBR	HOLDB3	7	02544	G 01025 B
3660		BU	*E19	7	02551	J 02576 /
3661		C	HOLDB3,&LESTP2	11	02558	C 01025 09727
3662		BE	QM	7	02569	J 02602 S
3663		B	TYPCK	7	02576	J 01071
3664		DCW	a#22.05a,G	6	02588	
3665		BBE	QL,IAD1,1	12	02590	W 02532 01001 1
3666	SUB-RTN 22.06		TEST LOOK UP HIGH			
3667	CM	LH	T04,HTBL	12	02602	T 09089 09099 4
3668		SBR	HOLDB3	7	02614	G 01025 B
3669		BH	*E8	7	02621	J 02635 U
3670		B	*E19	7	02628	J 02653
3671		C	HOLDB3,&HSTP	11	02635	C 01025 09732
3672		BE	QN	7	02646	J 02679 S
3673		B	TYPCK	7	02653	J 01071
3674		DCW	a#22.06a,G	6	02665	
3675		BBE	QM,IAD1,1	12	02667	W 02602 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3676	SUB-RTN 22.07		TEST LOOK UP LOW OR HIGH, STOP ON LOW			
3677	CN	LLH	T05,LHTBL1	12	02679	T 09101 09108 5
3678		SBR	HOLDB3	7	02691	G 01025 B
3679		BL	*E8	7	02698	J 02712 T
3680		B	*E19	7	02705	J 02730
3681		C	HOLDB3,&LHSTP1	11	02712	C 01025 09737
3682		BE	QP	7	02723	J 02756 S
3683		B	TYPCK	7	02730	J 01071
3684		DCW	a#22.07a,G	6	02742	
3685		B8E	QN,IAD1,1	12	02744	W 02679 01001 1
3686	SUB-RTN 22.08		TEST LOOK UP LOW OR HIGH, STOP ON HIGH			
3687	CP	LLH	T05,LHTBL2	12	02756	T 09101 09115 5
3688		SBR	HOLDB3	7	02768	G 01025 B
3689		BH	*E8	7	02775	J 02789 U
3690		B	*E19	7	02782	J 02807
3691		C	HOLDB3,&LHSTP2	11	02789	C 01025 09742
3692		BE	QQ	7	02800	J 02833 S
3693		B	TYPCK	7	02807	J 01071
3694		DCW	a#22.08a,G	6	02819	
3695		B8E	QP,IAD1,1	12	02821	W 02756 01001 1
3696	SUB-RTN 22.09		TEST LOOK UP EQUAL OR HIGH, STOP ON EQUAL			
3697	CQ	LEH	T06,EHTBL1	12	02833	T 09117 09124 6
3698		SBR	HOLDB3	7	02845	G 01025 B
3699		BU	*E19	7	02852	J 02877 /
3700		C	HOLDB3,&EHSTP1	11	02859	C 01025 09747
3701		BE	QR	7	02870	J 02903 S
3702		B	TYPCK	7	02877	J 01071
3703		DCW	a#22.09a,G	6	02889	
3704		B8E	QQ,IAD1,1	12	02891	W 02833 01001 1
3705	SUB-RTN 22.10		TEST LOOK UP EQUAL OR HIGH, STOP ON HIGH			
3706	CR	LEH	T06,EHTBL2	12	02903	T 09117 09131 6
3707		SBR	HOLDB3	7	02915	G 01025 B
3708		BH	*E8	7	02922	J 02936 U
3709		B	*E19	7	02929	J 02954
3710		C	HOLDB3,&EHSTP2	11	02936	C 01025 09752

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3711		BE	QS	7	02947	J 02980 S
3712		B	TYPCK	7	02954	J 01071
3713		DCW	a#22.10a,G	6	02966	
3714		BBE	QR,TAD1,1	12	02968	W 02903 01001 1
3715	SUB-RTN 22.11		TEST LOOK UP ANY, STOP ON LOW			
3716	CS	LA	T07,ANY1&2	12	02980	T 09133 09137 7
3717		SBR	HOLDB3	7	02992	G 01025 B
3718		BL	*E8	7	02999	J 03013 T
3719		B	*E19	7	03006	J 03031
3720		C	HOLDB3,&ANY1	11	03013	C 01025 09757
3721		BE	QT	7	03024	J 03057 S
3722		B	TYPCK	7	03031	J 01071
3723		DCW	a#22.11a,G	6	03043	
3724		BBE	QS,TAD1,1	12	03045	W 02980 01001 1
3725	SUB-RTN 22.12		TEST LOOK UP ANY, STOP ON EQUAL			
3726	QT	LA	T07,ANY2&2	12	03057	T 09133 09141 7
3727		SBR	HOLDB3	7	03069	G 01025 B
3728		BU	*E19	7	03076	J 03101 /
3729		C	HOLDB3,&ANY2	11	03083	C 01025 09762
3730		BE	QU	7	03094	J 03127 S
3731		B	TYPCK	7	03101	J 01071
3732		DCW	a#22.12a,G	6	03113	
3733		BBE	QT,TAD1,1	12	03115	W 03057 01001 1
3734	SUB-RTN 22.13		TEST LOOK UP ANY, STOP ON HIGH			
3735	QU	LA	T07,ANY3&2	12	03127	T 09133 09145 7
3736		SBR	HOLDB3	7	03139	G 01025 B
3737		BF	*E8	7	03146	J 03160 U
3738		B	*E19	7	03153	J 03178
3739		C	HOLDB3,&ANY3	11	03160	C 01025 09767
3740		BE	QV	7	03171	J 03204 S
3741		B	TYPCK	7	03178	J 01071
3742		DCW	a#22.13a,G	6	03190	
374		BE	QU,TAD1,1	12	03192	W 03177 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3745	ROUTINE 23.00		TEST MULTIPLY OPERATION			
3746						
3747	SUB-RTN 23.01		MULTIPLY ALL 64 CHARACTERS BY EACH OTHER.			
3748			CHECK RESULTS FOR PROPER SIGN, ZERO BALANCE,			
3749			AND THAT PRODUCT OF M X N EQUALS N X M.			
3750						
3751			BECAUSE THE TIME REQUIRED TO PERFORM THIS ROUTINE			
3752			IS RELATIVELY LONG, IT IS DONE ONLY THE FIRST			
3753			TIME THROUGH AND THEREAFTER ONLY WHEN THE PASS			
3754			COUNT WORK AREA IS REDUCED TO ZERO.			
3755						
3756	CV	NOPWM		1	03204	N
3757		B	QW	7	03205	J 04296
3758		CW	QVERSW&1	6	03212	□ 04256
3759		MLCWA	£04096,X14	12	03218	D 09772 00094 X
3760		MLCWA	£00064,X12	12	03230	D 09777 00084 X
3761	CVA	MLCWA	£00064,X13	12	03242	D 09777 00089 X
3762		MLCS	MPYTBLE&X12,WORK7	12	03254	D 09C44 09672 3
3763		MLCS	MPYTBLE&X13,WORK8	12	03266	D 09CU4 09673 3
3764	QVB	ZA	WORK7,WORK9	11	03278	M 09672 09674
3765		BZ	QVI	7	03289	J 03510 V
3766		ZA	WORK8,WORK9	11	03296	Q 09673 09674
3767		BZ	QVI	7	03307	J 03510 V
3768		CW	QVE&1	6	03314	□ 03386
3769	QVC	BZN	QVJ,WORK7,-	12	03320	V 03534 09672 K
3770		BZN	QVK,WORK8,-	12	03332	V 03546 09673 K
3771	QVD	CW	QVF&1	6	03344	□ 03401
3772	CVD1	MLCWS	WORK7,P1-2	12	03350	D 09672 09697 7
3773	CVD2	MLCWS	WORK8,P2-2	12	03362	D 09673 09700 7
3774						
3775		M	WORK7,P2	11	03374	□ 09672 09702
3776	CVE	NOPWM		1	03385	N
3777		B	QVL	7	03386	J 03559
3778		BZ	QVP	7	03393	J 03690 V
3779	CVF	NOPWM		1	03400	N

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3780		B	QVN	7	03401	J 03812
3781		BZN	QVP,P2,-	12	03408	V 03947 09702 K
3782	CVG	M	WORK8,P1	11	03420	a 09673 09699
3783		C	P1,P2	11	03431	C 09699 09702
3784		BU	QVC	7	03442	J 04070 /
3785	CVH	S	E1,X14	11	03449	S 09778 00094
3786		BZ	QVR	7	03460	J 04290 V
3787		S	E1,X13	11	03467	S 09778 00089
3788		BZ	*E8	7	03478	J 03492 V
3789		B	QVB	7	03485	J 03266
3790		S	E1,X12	11	03492	S 09778 00084
3791		B	QVA	7	03503	J 03242
3792						
3793	QVI	SW	QVEE1	6	03510	, 03386
3794		ZA	E1,WORK9	11	03516	M 09778 09674
3795		B	QVC	7	03527	J 03320
3796						
3797	CVJ	BZN	QVC,WORK8,-	12	03534	V 03344 09673 K
3798	CVK	SW	QVFE1	6	03546	, 03401
3799		B	QVD1	7	03552	J 03350
3800						
3801	CVL	BZ	QVF	7	03559	J 03400 V
3802		B	QVERR	7	03566	J 04236
3803		BBE	ERSKPI,TADC,1	12	03573	W 03651 01000 1
3804		MLCS	WORK7,ZROMSGE1	12	03585	D 09672 03629 3
3805		MLCS	WORK8,ZROMSGE2	12	03597	D 09673 03630 3
3806		MLCB	P2,ZROMSGE11	12	03609	D 09702 03639 L
3807		B	TYPE	7	03621	J 01026
3808	ZROMSG	DCW	a ** PROC a	9	03628	
3809			a***, S/B ZEROa,G	13	03649	
3810	ERSKPI	BBE	*E8,TAD2,1	12	03651	W 03670 01002 1
3811		B	*E2	7	03663	J 03671
3812		H		1	03670	.
3813		BBE	QVC2,TAD1,1	12	03671	W 03362 01001 1
3814		B	QVF	7	03683	J 03400

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3815						
3816	CVM	B	QVERR	7	03690	J 04236
3817		BBE	ERSKP2,TADC,1	12	03697	W 03773 01000 1
3818		MLCS	WORK7,NZMSG&1	12	03709	D 09672 03753 3
3819		MLCS	WORK8,NZMSG&2	12	03721	D 09673 03754 3
3820		MLCB	P2,NZMSG&11	12	03733	D 09702 03763 L
3821		B	TYPE	7	03745	J 01026
3822	NZMSG	DCW	a ** PROD a	9	03752	
3823			a***, S/B NZa,G	11	03771	
3824	ERSKP2	BBE	*&8,TAD2,1	12	03773	W 03792 01002 1
3825		B	*&2	7	03785	J 03793
3826		H		1	03792	.
3827		BBE	QVC2,TAD1,1	12	03793	W 03362 01001 1
3828		B	QVF	7	03805	J 03400
3829						
3830	CVN	BZN	QVG,P2,-	12	03812	V 03420 09702 K
3831		B	QVERR	7	03824	J 04236
3832		BBE	ERSKP3,TADC,1	12	03831	W 03908 01000 1
3833		MLCS	WORK7,NEGMSG&1	12	03843	D 09672 03887 3
3834		MLCS	WORK8,NEGMSG&2	12	03855	D 09673 03888 3
3835		MLCB	P2,NEGMSG&11	12	03867	D 09702 03897 L
3836		B	TYPE	7	03879	J 01026
3837	NEGMSG	DCW	a ** PROD a	9	03886	
3838			a***, S/B NEGa,G	12	03906	
3839	ERSKP3	BBE	*&8,TAD2,1	12	03908	W 03927 01002 1
3840		B	*&2	7	03920	J 03928
3841		H		1	03927	.
3842		BBE	QVC2,TAD1,1	12	03928	W 03362 01001 1
3843		B	QVC	7	03940	J 03420
3844						
3845	CVP	B	QVERR	7	03947	J 04236
3846		BBE	ERSKP4,TADC,1	12	03954	W 04031 01000 1
3847		MLCS	WORK7,POSMSG&1	12	03966	D 09672 04010 3
3848		MLCS	WORK8,POSMSG&2	12	03978	D 09673 04011 3
3849		MLCB	P2,POSMSG&11	12	03990	D 09702 04020 L

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3850		B	TYPE	7	04002	J 01026
3851	POSMG	DCW	a ** PROD a	9	04009	
3852			a***, S/B POSa,G BY ERROR ROUTINE	12	04029	
3853	ERSKP4	B8E	*E8,TAD2,1	12	04031	W 04050 01002 1
3854		B	*E2	7	04043	J 04051
3855		H		1	04050	.
3856		B8E	QV02,TAD1,1	12	04051	W 03362 01001 1
3857		B	QVG	7	04063	J 03420
3858						
3859	QVC	B	QVERR	7	04070	J 04236
3860		B8E	ERSKP5,TAD0,1	12	04077	W 04197 01000 1
3861		MLCS	WORK7,NEQMSG&1	12	04089	D 09672 04169 3
3862		MLCS	WORK8,NEQMSG&2	12	04101	D 09673 04170 3
3863		MLCB	P2,NEQMSG&11	12	04113	D 09702 04179 L
3864		MLCS	WORK8,NEQMSG&17	12	04125	D 09673 04185 3
3865		MLCS	WORK7,NEQMSG&18	12	04137	D 09672 04186 3
3866		MLCB	P1,NEQMSG&27	12	04149	D 09699 04195 L
3867		B	TYPE	7	04161	J 01026
3868	NEQMSG	DCW	a ** PROD a	9	04168	
3869			a***, NE ** PROD a FILLED IN BY	16	04192	
3870			a***a,G ERROR ROUTINE	3	04195	
3871	ERSKP5	B8E	*E8,TAD2,1	12	04197	W 04216 01002 1
3872		B	*E2	7	04209	J 04217
3873		H		1	04216	.
3874		B8E	QVC1,TAD1,1	12	04217	W 03350 01001 1
3875		B	QVH	7	04229	J 03449
3876						
3877	QVERR	SBR	QVEXIT&5	7	04236	G 04288 B
3878		B8E	QVEXIT,TADC,1	12	04243	W 04283 01000 1
3879	QVERSW	NCPWM		1	04255	N
3880		B	QVEXIT	7	04256	J 04283
3881		SW	*-12	6	04263	, 04256
3882		B	TYPE	7	04269	J 01026
3883		DCW	a#23.01a,G	6	04281	
3884	QVEXIT	B	0	7	04283	J 00000

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3885	CVR	SW	QV&1	6	04290	• 03205
3886	SUB-RTN 23.02		MAMMOTH MULTIPLY. MAXIMUM CYCLES AND CARRYS			
3887	CW	MLCA	FIVE4S,BIGANS-17	12	04296	D 09261 09326 T
3888		M	MANY9S,BIGANS	11	04308	@ 09277 09343
3889		C	BIGANS,PRODCI	11	04319	C 09343 09310
3890		BE	QX	7	04330	J 04363 S
3891		B	TYPCK	7	04337	J 01071
3892		DCW	@#23.02@,G	6	04349	
3893		BBE	QW,TAD1,1	12	04351	W 04296 01001 1
3894	SUB-RTN 23.03		CHECK ADDRESS REGISTERS FOLLOWING MULTIPLY			
3895	CX	ZA	FIVE4S-13,BIGANS-30	11	04363	Q 09248 09313
3896		M	MANY9S-15,BIGANS-28 A-FLD LENGTH 1, B-FLD LENGTH 5	11	04374	@ 09262 09315
3897		SAR	HOLDA3	7	04385	G 01020 A
3898		SBR	HOLDB3	7	04392	G 01025 B
3899		C	HOLDA3,K16	11	04399	C 01020 09431
3900		BU	*&19	7	04410	J 04435 /
3901		C	HOLDB3,K17	11	04417	C 01025 09436
3902		BE	QY	7	04428	J 04461 S
3903		B	TYPCK	7	04435	J 01071
3904		DCW	@#23.03@,G	6	04447	
3905		BBE	QX,TAD1,1	12	04449	W 04363 01001 1
3906	SUB-RTN 23.04		SIMILAR TO #23.03 WITH FIELD LENGTHS REVERSED			
3907	CY	ZA	MANY9S-15,BIGANS-32	11	04461	Q 09262 09311
3908		M	FIVE4S-13,BIGANS-28 A-FLD LENGTH 3, B-FLD LENGTH 5	11	04472	@ 09248 09315
3909		SAR	HOLDA3	7	04483	G 01020 A
3910		SBR	HOLDB3	7	04490	G 01025 B
3911		C	HOLDA3,K18	11	04497	C 01020 09441
3912		BU	*&19	7	04508	J 04533 /
3913		C	HOLDB3,K17	11	04515	C 01025 09436
3914		BE	RA	7	04526	J 04559 S
3915		B	TYPCK	7	04533	J 01071
3916		DCW	@#23.04@,G	6	04545	
3917		BBE	QY,TAD1,1	12	04547	W 04461 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3919	RCUTINE 24.00	TEST	DIVIDE OPERATION			
3920						
3921	SUB-RTN 24.01	INSURE	DIVIDE OVERFLOW OFF			
3922	RA	BCV	*E1	7	04559	J 04566 W
3923		BCV	*E8	7	04566	J 04580 W
3924		B	RB	7	04573	J 04606
3925		B	TYPC	7	04580	J 01071
3926		DCW	2#24.012,G	6	04592	
3927		B8E	RA,TAD1,1			
3928	SUB-RTN 24.02	DIVIDE	NUMBERS 0 THRU 9 BY NUMBERS 1 THRU 9	12	04594	W 04559 01001 1
3929	RB	CW	RBERSW&1	6	04606	□ 04845
3930		MLCWA	-0C009,X9	12	04612	D 09783 00069 X
3931	RBA	MLCWA	-0C010,X10	12	04624	D 09788 00074 X
3932	RBA1	ZA	CTABLE&1&X9,DIVSOR	11	04636	M 09M/9 09672
3933	RBB	ZA	CTABLE&1&X10,DIVDND	11	04647	M 09MJ9 09673
3934	RBC	ZA	DIVDND,QUOREM	11	04658	M 09673 09699
3935		D	DIVSOR,QUOREM	11	04669	2 09672 09699
3936		BCV	RBC	7	04680	J 04799 W
3937		ZA	QUOREM-2,QUOTNT	11	04687	M 09697 09675
3938		ZA	QUOREM,WCRK9	11	04698	M 09699 09674
3939		M	DIVSOR,QUOREM	11	04709	2 09672 09699
3940		A	WORK9,QUOREM	11	04720	A 09674 09699
3941		C	QUOREM,DIVDNC	11	04731	C 09699 09673
3942		BU	RBE	7	04742	J 04819 /
3943		A	E1,X10	11	04749	A 09778 00074
3944		BZ	*E8	7	04760	J 04774 V
3945		B	RBB	7	04767	J 04647
3946		A	E1,X9	11	04774	A 09778 00069
3947		BZ	RBC	7	04785	J 05132 V
3948		B	RBA	7	04792	J 04624
3949						
3950	RBC	SHR	X8	7	04799	G 00064 B
3951		SW	RBCFLOC&1	6	04806	, 04873
3952		B	RBERR	7	04812	J 04832
3953						

SET SW TO IND DIV OFLOW OCCURRED

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
3954	RBE	SBR	X8	7	04819	G 00064 B
3955		CW	RBCFLO&1	6	04826	D 04873
3956						
3957	RBERR	BBE	RBOFLO,TADC,1	12	04832	W 04872 01000 1
3958	RBERSW	NOPWM		1	04844	N
3959		B	RBOFLO	7	04845	J 04872
3960		SW	*-12	6	04852	, 04845
3961		B	TYPE	7	04858	J 01026
3962		DCW	@#24.02@,G	6	04870	
3963	RBOFLO	NOPWM		1	04872	N
3964		B	RBF	7	04873	J 05058
3965		BBE	ERSKP6,TADC,1	12	04880	W 05019 01000 1
3966		MLCS	DIVDND,DVMSG1&1	12	04892	D 09673 04984 3
3967		MLCS	DIVSOR,DVMSG1&3	12	04904	D 09672 04986 3
3968		MLCS	QUOTNT,DVMSG1&8	12	04916	D 09675 04991 3
3969		MLCS	WORK9,DVMSG1&15	12	04928	D 09674 04998 3
3970		MLCS	DIVSOR,DVMSG1&23	12	04940	D 09672 05006 3
3971		MLCS	QUOTNT,DVMSG1&26	12	04952	D 09675 05009 3
3972		MLCS	WORK9,DVMSG1&34	12	04964	D 09674 05017 3
3973		B	TYPE	7	04976	J 01026
3974	DVMSG1	DCW	@ */* EQ *, REM *, NEQ B*BB*B PLUS *a,G	35	04983	
3975	ERSKP6	BBE	*E8,TAD2,1	12	05019	W 05038 01002 1
3976		B	*E2	7	05031	J 05039
3977		H		1	05038	.
3978		BBE	RBC,TAD1,1	12	05039	W 04658 01001 1
3979		B	0EX8	7	05051	J 00.00
3980						
3981	RBF	BBE	ERSKP6,TADC,1	12	05058	W 05019 01000 1
3982		MLCS	DIVDND,DVMSG2&3	12	05070	D 09673 05104 3
3983		MLCS	DIVSOR,DVMSG2&5	12	05082	D 09672 05106 3
3984		B	TYPE	7	05094	J 01026
3985	DVMSG2	DCW	@ CO*/* CAUSED DIV OFLOW@,G	23	05101	
3986		B	ERSKP6	7	05125	J 05019
3987						
3988	RBG	ZS	RBA1 . THESE THREE OPERATIONS CHANGE THE OP CODES	6	05132	, 04636

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
3989		ZS	*E1 . AT RBA1 & RBB SO THAT IN FOUR PASSES ALL	6	05138	05144
3990		ZS	RBB . PLUS & MINUS NO.S ARE DIVIDED BY EACH OTHER	6	05144	04647
3991	SUB-RTN 24.03		CHECK DIVIDE OVERFLOW			
3992	RC	BCV	*E1	7	05150	J 05157 W
3993		ZA	*-10,QUOREM	11	05157	05157 09699
3994		ZA	*-10,DIVSOR	11	05168	05168 09672
3995		D	DIVSOR,QUOREM	11	05179	09672 09699
3996		BCV	*E8	7	05190	J 05204 W
3997		B	*E15	7	05197	J 05218
3998		BCV	*E8	7	05204	J 05218 W
3999		B	RD	7	05211	J 05244
4000		B	TYPCK	7	05218	J 01071
4001		DCW	@#24.03@,G	6	05230	
4002		BBE	RC,TAD1,1	12	05232	W 05150 01001 I
4003	SUB-RTN 24.04		TEST B-BIT RECOGNITION CKTS			
4004	RD	MLCWA	@#YI@,WORK11	12	05244	D 09792 09679 X
4005		D	-8,WORK11-1	11	05256	09793 09678
4006		C	WORK11,@/J*AA	11	05267	C 09679 09797
4007		BE	RE	7	05278	J 05311 S
4008		B	TYPCK	7	05285	J 01071
4009		DCW	@#24.04@,G	6	05297	
4010		BBE	RD,TAD1,1	12	05299	W 05244 01001 I
4011	SUB-RTN 24.05		INSURE NO INTERFERENCE BY WDMKS IN B-FIELD			
4012	RE	ZS	-8,WORK11	11	05311	09793 09679
4013		SW	WORK11,WORK11-1	11	05322	09679 09678
4014		D	-8,WORK11	11	05333	09793 09679
4015		BW	*E8,WORK11	12	05344	V 05363 09679 I
4016		B	RF	7	05356	J 05411
4017		BW	*E8,WORK11-1	12	05363	V 05382 09678 I
4018		B	RF	7	05375	J 05411
4019		CW	WORK11,WORK11-1	11	05382	09679 09678
4020		C	WORK11,@JCM@	11	05393	C 09679 09801
4021		BE	RG	7	05404	J 05448 S
4022	RF	B	TYPCK	7	05411	J 01071
4023		DCW	@#24.05@,G	6	05423	

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4024		CW	WORK11,WORK11-1	11	05425	□ 09679 09678
4025		BBE	RE,TAD1,1	12	05436	W 05311 01001 1
4026	SUB-RTN 24.06		PERFORM DIABOLIC DIVIDE			
4027	RG	ZA	K19,BIGANS-2	11	05448	Q M 09461 09341
4028		D	K20,BIGANS-21	11	05459	⌘ 09471 09322
4029		C	BIGANS-2,K21	11	05470	C 09341 09502
4030		BE	RH	7	05481	J 05514 S
4031		B	TYPCK	7	05488	J 01071
4032		DCW	@#24.06@,G	6	05500	
4033		BBE	RG,TAD1,1	12	05502	W 05448 01001 1
4034	SUB-RTN 24.07		CHECK ADDRESS REGISTERS FOLLOWING DIVIDE			
4035	RH	ZA	DTABLE,WORK11	11	05514	Q M 09418 09679
4036		D	K20-8,WORK11	11	05525	⌘ 09463 09679
4037		SAR	HOLDA3	7	05536	G 01020 A
4038		SBR	HOLDB3	7	05543	G 01025 B
4039		C	HOLDA3,K23	11	05550	C 01020 09512
4040		BU	*£19	7	05561	J 05586 /
4041		C	HOLDB3,K22	11	05568	C 01025 09507
4042		BE	RI	7	05579	J 05612 S
4043		B	TYPCK	7	05586	J 01071
4044		DCW	@#24.07@,G	6	05598	
4045		BBE	RH,TAD1,1	12	05600	W 05514 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4047	ROUTINE	25.00	CHECK OPERATION MOVE CHARACTERS & SUPPRESS ZEROS			
4048						
4049	SUB-RTN	25.01	TEST FOR ZCNE BIT REMOVAL, UNITS POSN, B-FIELD			
4050	RI	ZS	-8,P1	11	05612	09793 09699
4051		MCS	-8,P1	11	05623	09793 09699
4052		BZN	RJ,P1,	12	05634	05672 09699 2
4053		B	TYPCK	7	05646	J 01071
4054		DCW	a#25.01a,G	6	05658	
4055		BBE	RI,IAD1,1	12	05660	W 05612 01001 1
4056	SUB-RTN	25.02	TEST THAT B-FIELD WORD MARKS ARE REMOVED BY MCS			
4057	RJ	SW	P1,P1-1	11	05672	09699 09698
4058		MCS	a#25.01a,P1	11	05683	09803 09699
4059		BW	*E20,P1	12	05694	05725 09699 1
4060		BW	*E8,P1-1	12	05706	05725 09698 1
4061		B	RK	7	05718	J 05762
4062		B	TYPCK	7	05725	J 01071
4063		DCW	a#25.02a,G	6	05737	
4064		CW	P1,P1-1	11	05739	09699 09698
4065		BBE	RJ,IAD1,1	12	05750	W 05672 01001 1
4066	SUB-RTN	25.03	CHECK PROPER OPERATION OF EDIT SKID CYCLE			
4067	RK	MLCWA	a#25.01a,P1	12	05762	09805 09699 X
4068		MCS	a#25.01a,P1	11	05774	09802 09699
4069		C	a#25.01a,P1	11	05785	09806 09699
4070		CW	P1-1	6	05796	09698
4071		BE	RL	7	05802	J 05835 S
4072		B	TYPCK	7	05809	J 01071
4073		DCW	a#25.03a,G	6	05821	
4074		BBE	RK,IAD1,1	12	05823	W 05762 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4076	SUB-RTN 25.04		TEST ZERO SUPPRESS LATCH ON AT START OF SECOND			
4077			SCAN AND NCT RESET BY DECIMAL PT OR MINUS SIGN			
4078	RL	MCS	K24,WORK12	11	05835	Z 09519 09687
4079		C	WORK12,K28	11	05846	C 09687 09543
4080		BE	RM	7	05857	J 05890 S
4081		B	TYPCK	7	05864	J 01071
4082		DCW	a#25.04a,G	6	05876	
4083		BBE	RL,TAD1,1	12	05878	W 05835 01001 1
4084	SUB-RTN 25.05		TEST ZERO SUPPRESS LATCH ON AT START OF SECOND			
4085			SCAN AND NCT RESET BY ZERO, BLANK OR COMMA			
4086	RM	MCS	K25,WORK12	11	05890	Z 09525 09687
4087		C	WORK12,K29	11	05901	C 09687 09549
4088		BE	RN	7	05912	J 05945 S
4089		B	TYPCK	7	05919	J 01071
4090		DCW	a#25.05a,G	6	05931	
4091		BBE	RM,TAD1,1	12	05933	W 05890 01001 1
4092	SUB-RTN 25.06		TEST THAT FIRST SIGNIFICANT DIGIT TURNS OFF ZERO			
4093			SUPPRESS LATCH AND IT REMAINS OFF THROUGHOUT			
4094	RN	MCS	K26,WORK12	11	05945	Z 09531 09687
4095		C	WORK12,K30	11	05956	C 09687 09555
4096		BE	RP	7	05967	J 06000 S
4097		B	TYPCK	7	05974	J 01071
4098		DCW	a#25.06a,G	6	05986	
4099		BBE	RN,TAD1,1	12	05988	W 05945 01001 1

PGLIN	LABEL	SUB-RTN	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4101		SUB-RTN 25.07		TEST THAT FIRST NON-SIGNIFICANT DIGIT TURNS ON			
4102				ZERO SUPPRESS LATCH			
4103	RP		MCS	K27,WORK12	11	06000	Z 09536 09687
4104			C	WORK12,K31	11	06011	C 09687 09560
4105			BE	RR	7	06022	J 06055 S
4106			B	TYPCK	7	06029	J 01071
4107			DCW	a#25.07a,G	6	06041	
4108			BBE	RP,TAD1,1	12	06043	W 06000 01001 1
4109		SUB-RTN 25.08		CHECK ADDRESS REGISTERS FOLLOWING MCS INSTRUCTION			
4110	RR		MCS	WORK11,WORK12	11	06055	Z 09679 09687
4111			SAR	HOLDA3	7	06066	G 01020 A
4112			SBR	HOLDB3	7	06073	G 01025 B
4113			C	HOLDA3,K22	11	06080	C 01020 09507
4114			BU	*E19	7	06091	J 06116 /
4115			C	HOLDB3,K32	11	06098	C 01025 09565
4116			BE	SA	7	06109	J 06142 S
4117			B	TYPCK	7	06116	J 01071
4118			DCW	a#25.08a,G	6	06128	
4119			BBE	RR,TAD1,1	12	06130	W 06055 01001 1

SHOULD NOT BRANCH

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4121	ROUTINE 26.00		CHECK EDIT INSTRUCTION			
4122			ALL #26.XX ROUTINES END OPERATION AFTER 1ST SCAN			
4123	SUB-RTN 26.01		CHECK MCE FOR PROPER STEPPING OF AAR AND BAR			
4124	SA	MLCWA	£50,WORK13	12	06142	D 09808 09689 X
4125		SW	WORK13	6	06154	, 09689
4126		MCE	WORK13-1,WORK13	11	06160	E 09688 09689
4127		SAR	HOLDA3	7	06171	G 01020 A
4128		SBR	HOLDB3	7	06178	G 01025 B
4129		C	HOLDA3,K33	11	06185	C 01020 09570
4130		BU	*£19	7	06196	J 06221 /
4131		C	HOLDB3,K34	11	06203	C 01025 09575
4132		BE	SB	7	06214	J 06247 S
4133		B	TYPCK	7	06221	J 01071
4134		DCW	£#26.01£,G	6	06233	
4135		BBE	SA,TAD1,1	12	06235	W 06142 01001 1
4136	SUB-RTN 26.02		CHECK WM ELIMINATION IN B-FLD AND MOVE NO DATA			
4137	SB	MLCWA	£50,WORK13	12	06247	D 09808 09689 X
4138		SW	WORK13	6	06259	, 09689
4139		MCE	WORK13-1,WORK13	11	06265	E 09688 09689
4140		C	WORK13,£50	11	06276	C 09689 09808
4141		BU	*£19	7	06287	J 06312 /
4142		C	£50,WORK13	11	06294	C 09808 09689
4143		BE	SC	7	06305	J 06338 S
4144		B	TYPCK	7	06312	J 01071
4145		DCW	£#26.02£,G	6	06324	
4146		BBE	SB,TAD1,1	12	06326	W 06247 01001 1
4147	SUB-RTN 26.03		CHECK REPLACEMENT OF AMPERSAND BY BLANK			
4148	SC	MLCWA	£M££,WORK13	12	06338	D 09810 09689 X
4149		SW	WORK13	6	06350	, 09689
4150		MCE	WORK13-1,WORK13	11	06356	E 09688 09689
4151		SBR	HOLDB3	7	06367	G 01025 B
4152		C	HOLDB3,K34	11	06374	C 01025 09575
4153		BU	*£13	7	06385	J 06404 /
4154		BCE	SD,WORK13,	12	06392	B 06430 09689
4155		B	TYPCK	7	06404	J 01071

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4156		DCW	a#26.03a,G	6	06416	
4157		BBE	SC,TAD1,1	12	06418	W 06338 01001 1
4158	SUB-RTN 26.04		CONTROL FIELD BLANK, DATA FIELD NEGATIVE			
4159	SD	MLCWA	aJ a,WORK13	12	06430	D 09812 09689 X
4160		SW	WORK13	6	06442	, 09689
4161		MCE	WORK13-1,WCRK13	11	06448	E 09688 09689
4162		SBR	HOLDB3	7	06459	G 01025 B
4163		C	HOLDB3,K34	11	06466	C 01025 09575
4164		BU	*E13	7	06477	J 06496 /
4165		BCE	SE,WORK13,1	12	06484	B 06522 09689 1
4166		B	TYPCK	7	06496	J 01071
4167		DCW	a#26.04a,G	6	06508	
4168		BBE	SD,TAD1,1	12	06510	W 06430 01001 1
4169	SUB-RTN 26.05		CONTROL FIELD MINUS SIGN, DATA FIELD NEGATIVE			
4170	SE	MLCWA	aJ-a,WORK13	12	06522	D 09814 09689 X
4171		SW	WORK13	6	06534	, 09689
4172		MCE	WORK13-1,WORK13	11	06540	E 09688 09689
4173		SBR	HOLDB3	7	06551	G 01025 B
4174		C	HOLDB3,K34	11	06558	C 01025 09575
4175		BU	*E13	7	06569	J 06588 /
4176		BCE	SF,WORK13,-	12	06576	B 06614 09689 -
4177		B	TYPCK	7	06588	J 01071
4178		DCW	a#26.05a,G	6	06600	
4179		BBE	SE,TAD1,1	12	06602	W 06522 01001 1
4180	SUB-RTN 26.06		CONTROL FIELD LETTERS ZR, DATA FIELD POSITIVE			
4181	SF	MLCWA	aAZRa,WORK14	12	06614	D 09817 09692 X
4182		SW	WORK14-1	6	06626	, 09691
4183		MCE	WORK14-2,WCRK14	11	06632	E 09690 09692
4184		SBR	HOLDB3	7	06643	G 01025 B
4185		C	HOLDB3,K35	11	06650	C 01025 09580
4186		BU	*E19	7	06661	J 06686 /
4187		C	WORK14,aAZ a	11	06668	C 09692 09820
4188		BE	SG	7	06679	J 06712 S
4189		B	TYPCK	7	06686	J 01071
4190		DCW	a#26.06a,G	6	06698	

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4191		BBE	SF,TAD1,1	12	06700	W 06614 01001 1
4192	SUB-RTN 26.07		TURN ON EXTENSION LATCH AND NOT BODY LATCH			
4193	SG	MLCWA	a _G M, a,WORK14	12	06712	D 09823 09692 X
4194		SW	WORK14-1	6	06724	, 09691
4195		MCE	WORK14-2,WCRK14	11	06730	E 09690 09692
4196		SBR	HOLDB3	7	06741	G 01025 B
4197		C	HOLDB3,K35	11	06748	C 01025 09580
4198		BU	*E19	7	06759	J 06784 /
4199		C	WORK14,a _G M _T P _a	11	06766	C 09692 09826
4200		BE	SH	7	06777	J 06810 S
4201		B	TYPCK	7	06784	J 01071
4202		DCW	a#26.07a,G	6	06796	
4203		BBE	SG,TAD1,1	12	06798	W 06712 01001 1
4204	SUB-RTN 26.08		TURN ON BODY LATCH AND NOT EXTENSION LATCH			
4205	SH	MLCWA	a _S BC a,WORK15	12	06810	D 09830 09696 X
4206		SW	WORK15-1	6	06822	, 09695
4207		MCE	WORK15-2,WCRK15	11	06828	E 09694 09696
4208		SBR	HOLDB3	7	06839	G 01025 B
4209		C	HOLDB3,K36	11	06846	C 01025 09585
4210		BU	*E19	7	06857	J 06882 /
4211		C	WORK15,a _S BC a	11	06864	C 09696 09830
4212		BE	SI	7	06875	J 06908 S
4213		B	TYPCK	7	06882	J 01071
4214		DCW	a#26.08a,G	6	06894	
4215		BBE	SF,TAD1,1	12	06896	W 06614 01001 1
4216	SUB-RTN 26.09		TURN ON BODY AND EXTENSION LATCHES			
4217	SI	MLCWA	a _S a _S ,* a,WORK14	12	06908	D 09835 09692 X
4218		SW	WORK14-2	6	06920	, 09690
4219		MCE	WORK13,WCRK14	11	06926	E 09689 09692
4220		SBR	HOLDB3	7	06937	G 01025 B
4221		C	HOLDB3,K37	11	06944	C 01025 09590
4222		BU	*E19	7	06955	J 06980 /
4223		C	WORK14,a _S a _S a _S	11	06962	C 09692 09838
4224		BE	SJ	7	06973	J 07006 S
4225		B	TYPCK	7	06980	J 01071

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4241	ROUTINE 27.00		CHECK EDIT INSTRUCTION, CONTINUED			
4242			ALL #27.XX ROUTINES END OPERATION AFTER 2ND SCAN			
4243	SUB-RTN 27.01		TURN ON ZERO SUPPRESS LATCH, STORE NON-ZERO CHAR			
4244	SK	MLCWA	2EO2,WORK13	12	07098	D 09852 09689 X
4245		SW	WORK13	6	07110	, 09689
4246		MCE	WORK13-1,WORK13	11	07116	E 09688 09689
4247		SBR	HOLDB3	7	07127	G 01025 B
4248		C	HOLDB3,K38	11	07134	C 01025 09595
4249		BU	*E19	7	07145	J 07170 /
4250		C	WORK13,2E52	11	07152	C 09689 09854
4251		BE	SL	7	07163	J 07196 S
4252		B	TYPCK	7	07170	J 01071
4253		DCW	2#27.012,G	6	07182	
4254		B8E	SK,TAD1,1	12	07184	W 07098 01001 1
4255	SUB-RTN 27.02		ZERO IN 8-FLD WITH ZERO SUPPRESS ALREADY ON AND			
4256			CHECK REGEN EXT & 2ND SCAN LATCH IN SECOND SCAN			
4257	SL	MLCWA	2EM002,WORK15	12	07196	D 09858 09696 X
4258		SW	WORK15-1	6	07208	, 09695
4259		MCE	WORK15-2,WORK15	11	07214	E 09694 09696
4260		SBR	HOLDB3	7	07225	G 01025 B
4261		C	HOLDB3,K39	11	07232	C 01025 09600
4262		BU	*E19	7	07243	J 07268 /
4263		C	WORK15,2EMEM2	11	07250	C 09696 09862
4264		BE	SM	7	07261	J 07294 S
4265		B	TYPCK	7	07268	J 01071
4266		DCW	2#27.022,G	6	07280	
4267		B8E	SL,TAD1,1	12	07282	W 07196 01001 1
4268	SUB-RTN 27.03		CHECK ASTERISK FILL, DOLLAR SIGN TO LEFT IGNORED			
4269	SM	MLCWA	2\$*EO2,WORK15	12	07294	D 09866 09696 X
4270		MCE	27,0/2,WORK15	11	07306	E 09870 09696
4271		SBR	HOLDB3	7	07317	G 01025 B
4272		C	HOLDB3,K39	11	07324	C 01025 09600
4273		BU	*E19	7	07335	J 07360 /
4274		C	WORK15,2***12	11	07342	C 09696 09874
4275		BE	SN	7	07353	J 07386 S

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4276		B	TYPCK	7	07360	J 01071
4277		DCW	a#27.03a,G	6	07372	
4278		BBE	SM,TAD1,1	12	07374	W 07294 01001 1
4279	SUB-RTN 27.04		CHECK ASTERISK FILL AND DECIMAL CONTROL			
4280	SN	MLCWA	a *.0a,WCRK15	12	07386	D 09878 09696 X
4281		MCE	£070,WORK15	11	07398	E 09881 09696
4282		SBR	HOLDB3	7	07409	G 01025 B
4283		C	HOLDB3,K39	11	07416	C 01025 09600
4284		BU	*£19	7	07427	J 07452 /
4285		C	WORK15,a*.70a	11	07434	C 09696 09885
4286		BE	SP	7	07445	J 07478 S
4287		B	TYPCK	7	07452	J 01071
4288		DCW	a#27.04a,G	6	07464	
4289		BBE	SN,TAD1,1	12	07466	W 07386 01001 1
4290	SUB-RTN 27.05		PROVE THAT NON-SIGNIFICANT DIGIT SETS ZERO SUPPR			
4291	SP	MLCWA	a 0a,WORK15	12	07478	D 09890 09696 X
4292		MCE	a10X02a,WORK15	11	07490	E 09895 09696
4293		SBR	HOLDB3	7	07501	G 01025 B
4294		C	HOLDB3,K39	11	07508	C 01025 09600
4295		BU	*£19	7	07519	J 07544 /
4296		C	WORK15,a10X 2a	11	07526	C 09696 09900
4297		BE	SQ	7	07537	J 07570 S
4298		B	TYPCK	7	07544	J 01071
4299		DCW	a#27.05a,G	6	07556	
4300		BBE	SP,TAD1,1	12	07558	W 07478 01001 1
4301	SUB-RTN 27.06		PROVE THAT PERIOD AND ZERO SUPPRESS OFF			
4302			DOES NOT SET DECIMAL CONTROL ON			
4303	SQ	MLCWA	a0.*,0a,WORK15	12	07570	D 09905 09696 X
4304		MCE	a5a,a,WORK15	11	07582	E 09908 09696
4305		SBR	HOLDB3	7	07593	G 01025 B
4306		C	HOLDB3,K39	11	07600	C 01025 09600
4307		BU	*£19	7	07611	J 07636 /
4308		C	WORK15,a5.a*#a	11	07618	C 09696 09913
4309		BE	SR	7	07629	J 07662 S
4310		B	TYPCK	7	07636	J 01071

C0208-3 1410 CPU ERROR DETECTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4311		DCW	@#27.06@,G	6	07648	
4312		B8E	SQ,TAD1,1	12	07650	W 07570 01001 1
4313	SUB-RTN	27.07	PROVE DEC CTL ON, PROPER TREATMENT OF MINUS SIGN			
4314	SR	MLCWA	K41,WORK15	12	07662	D 09613 09696 X
4315		MCE	-7007,WORK15	11	07674	E 09917 09696
4316		SBR	HOLDB3	7	07685	G 01025 B
4317		C	HOLDB3,K39	11	07692	C 01025 09600
4318		BU	*E19	7	07703	J 07728 /
4319		C	WORK15,K42	11	07710	C 09696 09621
4320		B8E	SS	7	07721	J 07754 S
4321		B	TYPCK	7	07728	J 01071
4322		DCW	@#27.07@,G	6	07740	
4323		B8E	SR,TAD1,1	12	07742	W 07662 01001 1

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4325	ROUTINE 28.00		CHECK EDIT INSTRUCTION, CONCLUDED			
4326			ALL #28.XX ROUTINES REQUIRE THREE SCANS			
4327	SUB-RTN 28.01		CHECK FLOATING DOLLAR SIGN AND SKID CYCLE, SCAN 3			
4328	SS	MLCWA	a\$OVA,WORK14	12	07754	D 09920 09692 X
4329		MCE	EOO,WORK14-1	11	07766	E 09922 09691
4330		SBR	HOLDB3	7	07777	G 01025 B
4331		C	HOLDB3,K35	11	07784	C 01025 09580
4332		BU	*E19	7	07795	J 07820 /
4333		C	WORK14,a \$Va	11	07802	C 09692 09925
4334		BE	ST	7	07813	J 07846 S
4335		B	TYPCK	7	07820	J 01071
4336		DCW	a#28.01a,G	6	07832	
4337		B8E	SS,TAD1,1	12	07834	W 07754 01001 1
4338	SUB-RTN 28.02		GO TO 3RD SCAN BECAUSE DEC CTRL AND ZERO SUPPR ON			
4339			PROVE NON-SIGNIFICANT DEC & ZERO REPL WITH BLANKS			
4340	ST	MLCWA	a.Oa,WORK14	12	07846	D 09927 09692 X
4341		MCE	EO,WORK14	11	07858	E 09928 09692
4342		SBR	HOLDB3	7	07869	G 01025 B
4343		C	HOLDB3,K35	11	07876	C 01025 09580
4344		BU	*E19	7	07887	J 07912 /
4345		C	WORK14,a a	11	07894	C 09692 09930
4346		BE	SU	7	07905	J 07938 S
4347		B	TYPCK	7	07912	J 01071
4348		DCW	a#28.02a,G	6	07924	
4349		B8E	ST,TAD1,1	12	07926	W 07846 01001 1
4350	SUB-RTN 28.03		PROVE ASTERISKS REPLACE ZERO, DECIMAL IN 3RD SCAN			
4351	SU	MLCWA	a.*Oa,WORK14	12	07938	D 09933 09692 X
4352		MCE	EOO,WORK14	11	07950	E 09922 09692
4353		SBR	HOLDB3	7	07961	G 01025 B
4354		C	HOLDB3,K37	11	07968	C 01025 09590
4355		BU	*E19	7	07979	J 08004 /
4356		C	WORK14,a***1a-1	11	07986	C 09692 09873
4357		BE	SV	7	07997	J 08030 S
4358		B	TYPCK	7	08004	J 01071
4359		DCW	a#28.03a,G	6	08016	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4360		BEE	SU,TAD1,1	12	08018	W 07938 01001 1
4361	SUB-RTN 28.04		RETAIN CHARACTER & REPLACE BLANK WITH ASTERISK			
4362	SV	MLCWA	a*.M0a,WORK14	12	08030	D 09937 09692 X
4363		MCE	aZ a,WORK14	11	08042	E 09939 09692
4364		SBR	HOLDB3	7	08053	G 01025 B
4365		C	HOLDB3,K37	11	08060	C 01025 09590
4366		BU	*E19	7	08071	J 08096 /
4367		C	WORK14,aZ*M*a	11	08078	C 09692 09943
4368		BE	SW	7	08089	J 08122 S
4369		B	TYPCK	7	08096	J 01071
4370		DCW	a#28.04a,G	6	08108	
4371		BEE	SV,TAD1,1	12	08110	W 08030 01001 1
4372	SUB-RTN 28.05		CHECK THAT BLANK IN UNITS POSN RETAINED IN SCAN 3			
4373	SW	MLCWA	a0.0a,WORK14	12	08122	D 09946 09692 X
4374		MCE	a, a,WORK14	11	08134	E 09948 09692
4375		SBR	HOLDB3	7	08145	G 01025 B
4376		C	HOLDB3,K35	11	08152	C 01025 09580
4377		BU	*E19	7	08163	J 08188 /
4378		C	WORK14,a 0a-2	11	08170	C 09692 09888
4379		BE	SX	7	08181	J 08214 S
4380		B	TYPCK	7	08188	J 01071
4381		DCW	a#28.05a,G	6	08200	
4382		BEE	SV,TAD1,1	12	08202	W 08122 01001 1
4383	SUB-RTN 28.06		ZERO SUPPRESS & DECIMAL CONTROL BOTH OFF, SCAN 3			
4384			INSURE THAT * TO LEFT OF \$ IGNORED IN SCAN 2			
4385	SX	MLCWA	a*\$0a,WORK15	12	08214	D 09952 09696 X
4386		MCE	a6.0a,WORK15	11	08226	E 09955 09696
4387		SBR	HOLDB3	7	08237	G 01025 B
4388		C	HOLDB3,K40	11	08244	C 01025 09605
4389		BU	*E19	7	08255	J 08280 /
4390		C	WORK15,a\$6.0a	11	08262	C 09696 09959
4391		BE	SY	7	08273	J 08306 S
4392		B	TYPCK	7	08280	J 01071
4393		DCW	a#28.06a,G	6	08292	
4394		BEE	SX,TAD1,1	12	08294	W 08214 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4415	ROUTINE 29.00		CHECK CHAINED OPERATIONS			
4416						
4417	SUB-RTN 29.01		CHAINED BRANCH-ON-WORD-MARK INSTRUCTIONS			
4418	TA	CS	202	6	08465	/ 00202
4419		SW	200	6	08471	, 00200
4420		BW	*E8,202	12	08477	V 08496 00202 1
4421		BW		1	08489	V
4422		BW	TB	6	08490	V 08522
4423		B	TYPCK	7	08496	J 01071
4424		DCW	a#29.01a,G	6	08508	
4425		BBE	TA,IAD1,1	12	08510	W 08465 01001 1
4426	SUB-RTN 29.02		CHAINED SET WORD MARK INSTRUCTIONS			
4427	TB	CS	206	6	08522	/ 00206
4428		SW	206,202	11	08528	, 00206 00202
4429		SW		1	08539	,
4430		SW	204	6	08540	, 00204
4431		SW		1	08546	,
4432		BW	*E8,205	12	08547	V 08566 00205 1
4433		B	TC	7	08559	J 08623
4434		BW	*E8,203	12	08566	V 08585 00203 1
4435		B	TC	7	08578	J 08623
4436		BW	*E8,201	12	08585	V 08604 00201 1
4437		B	TC	7	08597	J 08623
4438		BW	*E8,200	12	08604	V 08623 00200 1
4439		B	TD	7	08616	J 08649
4440	TC	B	TYPCK	7	08623	J 01071
4441		DCW	a#29.02a,G	6	08635	
4442		BBE	TB,IAD1,1	12	08637	W 08522 01001 1
4443	SUB-RTN 29.03		CHAINED CLEAR WORD MARK INSTRUCTIONS			
4444	TD	SW	205,202	11	08649	, 00205 00202
4445		SW		1	08660	,
4446		SW		1	08661	,
4447		CW	206,202	11	08662	□ 00206 00202
4448		CW		1	08673	□
4449		CW	204	6	08674	□ 00204

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4450		CH		1	08680	D
4451		BW	TE,205	12	08681	V 08703 00205 1
4452		BW		1	08693	V
4453		BW		1	08694	V
4454		BW		1	08695	V
4455		BW		1	08696	V
4456		BW	TF	6	08697	V 08729
4457	TE	B	TYPCK	7	08703	J 01071
4458		DCW	a#29.03a,G	6	08715	
4459		BBE	TD,TAD1,1	12	08717	W 08649 01001 1
4460		SUB-RTN 29.04	CHAINED BRANCH UNCONDITIONAL			
4461	TF	BCE	TG,TF,	12	08729	B 08768 08729
4462		DCW	aJa	1	08741	
4463		B	TYPCK	7	08742	J 01071
4464		DCW	a#29.04a,G	6	08754	
4465		BBE	TF,TAD1,1	12	08756	W 08729 01001 1
4466		SUB-RTN 29.05	CHAINED CONDITIONAL BRANCH. SIMILAR TO #29.04			
4467	TG	BCE	*E9,TG,S	12	08768	B 08788 08768 S
4468		DCW	aJa	1	08780	
4469		B	TH	7	08781	J 08814
4470		B	TYPCK	7	08788	J 01071
4471		DCW	a#29.05a,G	6	08800	
4472		BBE	TG,TAD1,1	12	08802	W 08768 01001 1
4473		SUB-RTN 29.06	CHAINED CLEAR STORAGE INSTRUCTION			
4474	TH	MLCWA	aXMa,200	12	08814	D 09972 00200 X
4475		SW	20C	6	08826	, 00200
4476		CS	300	6	08832	/ 00300
4477		CS		1	08838	/
4478		C	a X a,200	11	08839	C 09975 00200
4479		BE	TI	7	08850	J 08883 S
4480		B	TYPCK	7	08857	J 01071
4481		DCW	a#29.06a,G	6	08869	
4482		BBE	TH,TAD1,1	12	08871	W 08814 01001 1
4483		SUB-RTN 29.07	CHAINED CLEAR STORAGE & BRANCH INSTRUCTION			
4484	TI	MRCWR	*E8,200	12	08883	D 08902 00200 S

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4485		B	200	7	08895	J 00200
4486		CS	212,300 * RELOC TO 00200, CLEARS & BR TO LOC 00212	11	08902	/ 00212 00300
4487		H	* RELOC TO 00211, NEVER EXECUTED	1	08913	.
4488		CS	* RELOC TO 00212, SHOULD CLEAR 00211-00200	1	08914	/
4489		B	TJ * RELOC TO 00213, RETURN TO MAIN PROGRAM	7	08915	J 08923
4490		DCW	a#2 * RELOC TO 00220, TERMINAL CHAR FOR MRCWR	1	08922	
4491	TJ	BCE	TK,200, EXAMINE LOC 00200. SHOULD BRANCH	12	08923	B 01289 00200
4492		B	TYPCK	7	08935	J 01071
4493		DCW	a#29.07a,G	6	08947	
4494		BBE	TI,TAD1,1	12	08949	W 08883 01001 1
4495		B	TK	7	08961	J 01289
4496		H		1	08968	.
4497	ENDPH3	EQU	*			
4498	SUB-RTN 29.08		CHAINED DATA MOVE INSTRUCTIONS			
4499		ORG	LOWLOC		01289	
4500	TK	CS	214	6	01289	/ 00214
4501		MLCWA	a5.a#a,214	12	01295	D 09913 00214 X
4502		MLCWA	214	6	01307	D 00214
4503		MLCWA		1	01313	D
4504		C	204,a5.a#a	11	01314	C 00204 09913
4505		BE	TL	7	01325	J 01358 S
4506		B	TYPCK	7	01332	J 01071
4507		DCW	a#29.08a,G	6	01344	
4508		BBE	TK,TAD1,1	12	01346	W 01289 01001 1
4509	SUB-RTN 29.09		CHAINED ZERO-ADD INSTRUCTION			
4510	TL	CS	209	6	01358	/ 00209
4511		SW	200,205	11	01364	/ 00200 00205
4512		ZA	DTABLE,209	11	01375	M 09418 00209
4513		ZA		1	01386	M
4514		C	204,£00008	11	01387	C 00204 09980
4515		BE	TM	7	01398	J 01431 S
4516		B	TYPCK	7	01405	J 01071
4517		DCW	a#29.09a,G	6	01417	
4518		BBE	TL,TAD1,1	12	01419	W 01358 01001 1
4519	SUB-RTN 29.10		CHAINED ZERO-SUBTRACT. SIMILAR TO #29.09			

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRES	INSTRUCTION
4520	TM	CS	202	6	01431	/ 00202
4521		SW	200,202	11	01437	, 00200 00202
4522		ZS	2Z*M+2,202	11	01448	; 09943 00202
4523		ZS		1	01459	;
4524		C	201,244	11	01460	C 00201 09982
4525		BE	TN	7	01471	J 01504 S
4526		B	TYPCK	7	01478	J 01071
4527		DCW	2#29.102,G	6	01490	
4528		B8E	TM,TAD1,1	12	01492	W 01431 01001 I
4529	SUB-RTN 29.11		CHAINED ADD INSTRUCTION			
4530	TN	CS	203	6	01504	/ 00203
4531		SW	200,202	11	01510	, 00200 00202
4532		A	DTABLE,202	11	01521	A 09418 00202
4533		A		1	01532	A
4534		C	201,2082	11	01533	C 00201 09984
4535		BE	TP	7	01544	J 01577 S
4536		B	TYPCK	7	01551	J 01071
4537		DCW	2#29.112,G	6	01563	
4538		B8E	TN,TAD1,1	12	01565	W 01504 01001 I
4539	SUB-RTN 29.12		CHAINED SUBTRACT INSTRUCTION			
4540	TP	MLCWA	-00009,204	12	01577	D 09783 00204 X
4541		SW	201,204	11	01589	, 00201 00204
4542		S	204,203	11	01600	S 00204 00203
4543		S		1	01611	S
4544		BCE	TQ,200,R	12	01612	B 01650 00200 R
4545		B	TYPCK	7	01624	J 01071
4546		DCW	2#29.122,G	6	01636	
4547		B8E	TP,TAD1,1	12	01638	W 01577 01001 I

PGLIN	LABEL	SUB-RTN 29.13	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4549				CHAINED MULTIPLY INSTRUCTIONS			
4550	TQ	CS	211	.	6	01650	/ 00211
4551		SW	211	. SET	6	01656	, 00211
4552		SW		. UP	1	01662	.
4553		SW	209,206	. WORK	11	01663	, 00209 00206
4554		SW	203,200	. FIELD	11	01674	, 00203 00200
4555		ZA	DTABLE,211	. WITH	11	01685	M 09418 00211
4556		ZS		. CONSTANTS	1	01696	.
4557		ZA		. FROM	1	01697	M
4558		ZS	DTABLE-3,206	. DIVIDE	11	01698	, 09415 00206
4559		ZS	DTABLE-4,203	. TABLE	11	01709	, 09414 00203
4560		ZS	DTABLE-5,200	.	11	01720	, 09413 00200
4561		M	209,208	ESTABLISH A & B ADDR REG SETTINGS	11	01731	@ 00209 00208
4562		M	211	ALTER A-FLD ADDR, CHAIN B-ADDR	6	01742	@ 00211
4563		M		CHAIN BOTH A & B ADDRESSES	1	01748	@
4564		C	205,-045	TEST EFFECT OF 1ST CHAINED MPY	11	01749	C 00205 09987
4565		BU	*E19	SHOULD NOT BRANCH	7	01760	J 01785 /
4566		C	202,&032	TEST EFFECT OF 2ND CHAINED MPY	11	01767	C 00202 09990
4567		BE	TQ1	SHOULD BRANCH	7	01778	J 01811 S
4568		B	TYPCK		7	01785	J 01071
4569		DCW	@#29.13@,G		6	01797	
4570		BBE	TQ,TAD1,1		12	01799	M 01650 01001 1

LABEL

OPCOD

OPERAND

CT

ADDRS

INSTRUCTION

C020B-3

C020B-3

PGLIN

4572

4573

4574

4575

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4589

COUNT PASSES, ALLOW FOR PROGRAM MODIFICATION

TQ1

INC

BNQ

S

E1,PCCWK

BZ

*E8

B

START

BBE

TQ2B,TAD3,1

B

TYPE

DCW

a-PASS-a,G

CS

204

SW

20C

MLCWB

1004,204

B

LOADER

BW

TQ2A,999

TQ2B

AGAIN

CW

QA&1,QV&1

B

START

H

TQ1

TQ2

BZ

B

BBE

B

DCW

CS

SW

MLCWB

B

BW

CW

B

H

TQ1

TQ2

BZ

B

BBE

B

DCW

CS

SW

MLCWB

B

BW

CW

B

H

TQ1

TQ2

BZ

B

BBE

B

DCW

CS

SW

MLCWB

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BW

CW

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TQ1

TQ2

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BBE

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TQ2

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CT ADDR INSTRUCTION

CONSTANTS AND WORK AREAS

TABLES OF DATA USED IN TABLE LOOK UP TEST

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
4591					08969	
4592						
4593						
4594						
4595		ORG	ENDPH3		08973	08974
4596	ENDA	DCW	ENDITM-1	5		
4597	ENDITM		ABEa	2	08975	
4598			a a LLG RG	1	08976	
4599			a a BTME a BMa	10	08986	
4600			a a L- / a SSMB a a TMABEa	19	09005	
4601	ENDTBL		acDEFGHI JKLMNOPQR+STUVWXYZ0123456789\$a	37	09042	
4602						
4603	LLCON		T01-2	5	09047	09047
4604	T01		aB/a	2	09049	
4605			a a	1	09050	
4606	LSTP		a a a	3	09051	
4607			a B/a	3	09056	
4608	LTBL		a a a	3	09059	
4609						
4610	T02		aS#a	2	09061	
4611			a a B	1	09062	
4612	ESTP		a S#a	3	09063	
4613			a S#a	3	09068	
4614	ETBL		a M#a	3	09071	
4615						
4616	T03		aM#a	2	09073	
4617			a a C	1	09074	
4618	LESTP1		a TCa	3	09075	
4619	LETBL1		a M#a	3	09080	
4620						
4621			a a T	1	09081	
4622	LESTP2		a MBa	3	09082	
4623	LETBL2		a MBa	3	09087	
4624						
4625	T04		aE1a	2	09089	

[illegible]

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4694	K28		a - . . a	7	09543	
4695	K29		a a	6	09549	
4696	K30		a9 .,-0a	6	09555	
4697	K31		a 9,\$ a	5	09560	
4698	K32		WORK12a1	5	09565	09688
4699	K33		WORK13-2	5	09570	09687
4700	K34		WORK13-1	5	09575	09688
4701	K35		WORK14-2	5	09580	09690
4702	K36		WORK15-2	5	09585	09694
4703	K37		WORK14-3	5	09590	09689
4704	K38		WORK13a1	5	09595	09690
4705	K39		WORK15a1	5	09600	09697
4706	K40		WORK15-4	5	09605	09692
4707	K41		a - X.Y 0a	8	09613	
4708	K42		a7-0X.Y07a	8	09621	
4709	K43		a , \$90\$*C.-0a	20	09641	
4710	K44		a,Naf , 0Na	10	09651	
4711	K45		a*****NaF***9, 0C.-5a	20	09671	
4712	WORK7		a a	1	09672	
4713	WORK8		a a	1	09673	
4714	WORK9		a a	1	09674	
4715	WORK10		a a	1	09675	
4716	WORK11		a a	4	09679	
4717	WORK12		a a a	8	09687	
4718	WORK13		a a	2	09689	
4719	WORK14		a a	3	09692	
4720	WORK15		a a	4	09696	
4721	P1		a a	3	09699	
4722	P2		a a	3	09702	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4724		LIORG *			09703	
4724		ENDITM		5	09707	08975
4724		LSTP		5	09712	09051
4724		ESTP		5	09717	09063
4724		LESTP1		5	09722	09075
4724		LESTP2		5	09727	09082
4724		HSTP		5	09732	09091
4724		LHSTP1		5	09737	09103
4724		LHSTP2		5	09742	09110
4724		EHSTP1		5	09747	09119
4724		EHSTP2		5	09752	09126
4724		ANY1		5	09757	09135
4724		ANY2		5	09762	09139
4724		ANY3		5	09767	09143
4724		E04096		5	09772	
4724		E0C064		5	09777	
4724		E1		1	09778	
4724		-0C009		5	09783	
4724		-0C010		5	09788	
4724		a*Y1a		4	09792	
4724		-8		1	09793	
4724		a/J*aa		4	09797	
4724		aOJOMa		4	09801	
4724		SS		2	09803	
4724		aBba		3	09806	
4724		aXX a		2	09808	
4724		E5C		2	09810	
4724		aMea		2	09812	
4724		aJ a		2	09814	
4724		aJ-a		3	09817	
4724		aAZRa		3	09820	
4724		aAZ a		3	09823	
4724		aM, a		3	09826	
4724		aM Ma		4	09830	
4724		a.BC a		5	09835	
4724		aM, a				

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4724			a'.Eaa	3	09838	
4724			ax-\$E a	5	09843	
4724			aZRa	2	09845	
4724			ax-Z 9a	5	09850	
4724			aEOa	2	09852	
4724			aE5a	2	09854	
4724			aEM00a G T	4	09858	
4724			aEMEMa	4	09862	
4724			a\$*E0a	4	09866	
4724			a7.0/a	4	09870	
4724			a**1a	4	09874	
4724			a .*0a	4	09878	
4724			E070	3	09881	
4724			a*.70a	4	09885	
4724			a 0a	5	09890	
4724			a10X02a	5	09895	
4724			a10X 2a	5	09900	
4724			a0.**.0a	5	09905	
4724			a5a.a	3	09908	
4724			a5.a**a	5	09913	
4724			-7C07	4	09917	
4724			a\$Cva	3	09920	
4724			E0C	2	09922	
4724			a \$va	3	09925	
4724			a.Ca	2	09927	
4724			E0	1	09928	
4724			a a	2	09930	
4724			a.*0a	3	09933	
4724			a*.M0a	4	09937	
4724			aZ a	2	09939	
4724			aZ*M*a	4	09943	
4724			a0.0a	3	09946	
4724			a. a	2	09948	
4724			a *\$0a	4	09952	
4724			a6.0a	3	09955	

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INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS
4724			a\$6.0a	4	09959
4724			a0C\$0a	4	09963
4724			a.30a	3	09966
4724			a .30a	4	09970
4724			aXMa	2	09972
4724			a X a	3	09975
4724			£0CC08	5	09980
4724			£44	2	09982
4724			a08a	2	09984
4724			-045	3	09987
4724			£032	3	09990

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4726	XRO	EQU	24			
4727	INTAPE	EQU	10, CU			
4728	BSPTPO	EQU	982			
4729						
4730		ORG	1000		01000	
4731						
4732		DC	a a, G	5	01004	
4733						
4734		DCW	£00100	5	01010	PASS COUNT CONSTANT
4735			a a	5	01015	PASS COUNT WORK AREA
4736						
4737			a a	5	01020	• COMMON AREA FOR STORING
4738			a a	5	01025	• ADDRESS REGISTERS
4739						
4740		SBR	*£9	7	01026	G 01041 B
4741		WCP	0	10	01033	M £TO 00000 W
4742		SBR	*£20	7	01043	G 01069 B
4743		BCB1	*-23	7	01050	R 01033 2
4744		BA1	*£1	7	01057	R 01064 M
4745		B	0	7	01064	J 00000
4746						
4747		SBR	*£39	7	01071	G 01116 B
4748		SBR	*£65	7	01078	G 01149 B
4749		A	*-17, *£54	11	01085	A 01078 01149
4750		BBE	*£25, TAD0, 1	12	01096	W 01132 01000 1
4751		WCP	0	10	01108	M £TO 00000 W
4752		BCB1	*-16	7	01118	R 01108 2
4753		BA1	*£1	7	01125	R 01132 M
4754		BBE	*£8, TAD2, 1	12	01132	W 01151 01002 1
4755		B	0	7	01144	J 00000
4756		H	*-12	6	01151	• 01144

PGLIN	LABEL	OPCODE	OPERAND	COMMON ADDRESS ALTER ROUTINE	CT	ADDRS	INSTRUCTION
4758		RCP	*E26		10	01157	M ZTO 01192 R
4759		BNTL	*E39 T		7	01167	R 01212 B
4760		BEXL	*-23,M		7	01174	R 01157 M
4761		BAI	*E1		7	01181	R 01188 M
4762		RCPW	0 S		10	01188	L ZTO 00000 R
4763		BEXL	*-16,M		7	01198	R 01188 M
4764		BAI	*E1		7	01205	R 01212 M
4765		B	WB		7	01212	J 03684
4766		DCW	aMa		1	01219	
4767							
4768		ORG	CTLIND			01230	
4769		DC	a a		9	01238	
4770		DCW	a1.12.101MCZa	ICK OR 20K, SEQ NO. 014, DUMP TO 09999 ON TAPE	11	01249	
4771							
4772		ORG	IDENT			01250	
4773		DCW	aCC208a,G		5	01254	
4774							
4775		ORG	SYSCTL			01256	
4776		DC	a	#a	33	01288	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4778		ORG	START		02000	
4779						
4780		B	LOWLOC	7	02000	J 01289
4781						
4782		ORG	LOWLOC		01289	
4783						
4784						
4785						
4786						
4787		NOPWM		1	01289	N
4788		B	TQ4	7	01290	J 01355
4789		SW	*-12	6	01297	, 01290
4790		B	TYPE	7	01303	J 01026
4791		DCW	@ C020B-4a,G	8	01317	
4792		CS	10C4	6	01319	/ 01004
4793		SW	10C0	6	01325	, 01000
4794		MLCWB	204,1004	12	01331	D 00204 01004 P
4795		MRCWR	K49,1	12	01343	D 04292 00001 M
4796	TQ4	NOPWM		1	01355	N
4797		B	TR	7	01356	J 01380
4798		SW	*-12	6	01363	, 01356
4799		ZA	PCC,PCCWK	11	01369	M 01010 01015

PHASE 4 BEGINS HERE

BACK TO LOWEST AVAILABLE ADDRESS

TYPE IDENT, INITIALIZE LOC 00001-00008 FOR
RESTART, INITIALIZE PASS COUNTER, RESTORE TADS

USE SAME TADS AS PREVIOUS PHASE

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4801	SUB-RTN 29.14		CHAINED DIVIDE INSTRUCTION. B-ADDR ONLY			
4802	TR	MLCWA	2001.2,203	12	01380	D 04476 00203 X
4803		CW	203	6	01392	D 00203
4804		D	25	6	01398	X 04477
4805		C	202.2A0D2	11	01404	C 00202 04480
4806		BE	TS	7	01415	J 01448 S
4807		B	TYPCK	7	01422	J 01071
4808		DCW	229.142,G	6	01434	
4809		B8E	TR,TAD1.1	12	01436	W 01380 01001 1
4810	SUB-RTN 29.15		CHAINED DIVIDE INSTRUCTION, A & B ADDRESSES			
4811	TS	MLCWA	20COE2,203	12	01448	D 04484 00203 X
4812		SW	201.204	11	01460	X 00201 00204
4813		D		1	01471	X
4814		C	203.2JOM2	11	01472	C 00203 04487
4815		BE	TT	7	01483	J 01516 S
4816		B	TYPCK	7	01490	J 01071
4817		DCW	229.152,G	6	01502	
4818		B8E	TS,TAD1.1	12	01504	W 01448 01001 1
4819	SUB-RTN 29.16		CHAINED BRANCH ON BIT EQUAL			
4820	TT	B8E	TU,*21,R	12	01516	W 01554 01528 R
4821		B8E	*28	6	01528	W 01541
4822		B	TU	7	01534	J 01554
4823		MLWS	TV21,*21	12	01541	D 01581 01553 4
4824		B8E		1	01553	W
4825	TU	B	TYPCK	7	01554	J 01071
4826		DCW	229.162,G	6	01566	
4827		B8E	TT,TAD1.1	12	01568	W 01516 01001 1
4828	SUB-RTN 29.17		CHAINED BRANCH ON CHARACTER EQUAL			
4829	TV	NOP		1	01580	N
4830		BCE	TW,*21,Z	12	01581	B 01619 01593 Z
4831		BCE	*28	6	01593	B 01606
4832		B	TW	7	01599	J 01619
4833		MLWS	TX21,*21	12	01606	D 01646 01618 4
4834		BCE		1	01618	B
4835	TW	B	TYPCK	7	01619	J 01071

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4836		DCW	a#29.17a,G	6	01631	
4837		B8E	TV&1,TAD1,1	12	01633	W 01581 01001 1
4838	SUB-RTN 29.18		CHAINED COMPARE INSTRUCTIONS			
4839	TX	NOP		1	01645	N
4840		C	K46,K47	11	01646	C 04289 04290
4841		C	K46	6	01657	C 04289
4842		BE	*&8	7	01663	J 01677 S
4843		B	*&9	7	01670	J 01685
4844		C		1	01677	C
4845		BH	TY	7	01678	J 01711 U
4846		B	TYPCK	7	01685	J 01071
4847		DCW	a#29.18a,G	6	01697	
4848		B8E	TX&1,TAD1,1	12	01699	W 01646 01001 1
4849	SUB-RTN 29.19		CHAINED TABLE LOOK-UP INSTRUCTIONS			
4850	TY	LL	NTABLE-3,NTABLE	12	01711	T 04059 04062 1
4851		LL	NTABLE-6	6	01723	T 04056
4852		SBR	*&11	7	01729	G 01746 B
4853		BCE	*&8,0,A	12	01736	B 01755 00000 A
4854		B	TZ	7	01748	J 01787
4855		MLZS	NTABLE-6,NTABLE	12	01755	D 04056 04062 2
4856		LE		1	01767	T
4857		SBR	*&11	7	01768	G 01785 B
4858		BCE	UA,0,A	12	01775	B 01813 00000 A
4859	TZ	B	TYPCK	7	01787	J 01071
4860		DCW	a#29.19a,G	6	01799	
4861		B8E	TY,TAD1,1	12	01801	W 01711 01001 1
4862	SUB-RTN 29.20		CHAINED MOVE AND ZERO SUPPRESS INSTRUCTIONS			
4863	UA	MCS	K51,WORK16-1	11	01813	Z 04311 04051
4864		MCS	K51	6	01824	Z 04311
4865		C	WORK16,K54	11	01830	C 04052 04328
4866		BU	UB	7	01841	J 01878 /
4867		MCS	K51,WORK16-1	11	01848	Z 04311 04051
4868		MCS		1	01859	Z
4869		C	WORK16,K53	11	01860	C 04052 04322
4870		BE	UC	7	01871	J 01904 S

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4871	UB	B	TYPCK	7	01878	J 01071
4872		DCW	a#29.20a,G	6	01890	
4873		B8E	UA,TAD1,1	12	01892	W 01813 01001 1
4874	SUB-RTN 29.21		CHAINED MOVE CHARACTERS AND EDIT INSTRUCTION, #1			
4875	UC	MLCWA	aXC 00a,204	12	01904	D 04492 00204 X
4876		SW	202	6	01916	, 00202
4877		SW		1	01922	,
4878		MCE	a50,203	11	01923	E 04494 00203
4879		MCE	a50	6	01934	E 04494
4880		C	204,aX 550a	11	01940	C 00204 04499
4881		BE	UD	7	01951	J 02007 S
4882		B	TYPCK	7	01958	J 01071
4883		DCW	a#29.21a,G	6	01970	
4884		B8E	UC,TAD1,1	12	01972	W 01904 01001 1
4885		B	UD	7	01984	J 02007
4886		H		1	01991	.
4887	SUB-RTN 29.22		CHAINED MOVE CHARACTERS AND EDIT INSTRUCTION, #2			
4888		ORG	STARTa7		02007	
4889	UD	MLCWA	a .0a,202	12	02007	D 04502 00202 X
4890		SW	201	6	02019	, 00201
4891		MCE	K48,202	11	02025	E 04291 00202
4892		MCE		1	02036	E
4893		C	202,a8 a	11	02037	C 00202 04505
4894		BE	UE	7	02048	J 02081 S
4895		B	TYPCK	7	02055	J 01071
4896		DCW	a#29.22a,G	6	02067	
4897		B8E	UD,TAD1,1	12	02069	W 02007 01001 1
4898	SUB-RTN 29.23		TEST FOR NO RESET OF D-MODIFIER REGISTER			
4899	UE	BCE	*a8,*a1,J	12	02081	B 02100 02093 J
4900		CW	UFa1	6	02093	a 02127
4901		BCE		1	02099	B
4902		B	TYPCK	7	02100	J 01071
4903		DCW	a#29.23a,G	6	02112	
4904		B8E	UE,TAD1,1	12	02114	W 02081 01001 1
4905	SUB-RTN 29.24		TEST FOR RESET OF D-MODIFIER REGISTER			

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4906	UF	BAV	*E1	7	02126	J 02133 Z
4907		CW	UG1E1,UG	11	02133	D 02175 02173
4908		BCE		1	02144	B
4909		B	TYPCK	7	02145	J 01071
4910		DCW	a#29.24a,G	6	02157	
4911		BBE	UF,IAD1,1	12	02159	W 02126 01001 1
4912	UG	DCW	aN Za	3	02173	
4913	SUB-RTN 29.25		TEST THAT NOP HAS NO EFFECT ON CHAINED OPERATION			
4914	UG1	MLWS	UG2E1,*E1	12	02174	D 02226 02186 4
4915		DCW	aN28987654321a	12	02197	
4916		BCE		1	02198	B
4917		B	TYPCK	7	02199	J 01071
4918		DCW	a#29.25a,G	6	02211	
4919		BBE	UG1,IAD1,1	12	02213	W 02174 01001 1
4920	SUB-RTN 29.26		TEST THAT SBR INST DOES NOT EFFECT AAR OR BAR			
4921			BUT DOES ALTER THE OP MOD REGISTER			
4922	UG2	NOP		1	02225	N
4923		MLWS	UH,*E9	12	02226	D 02273 02246 4
4924		SBR	HOLDB4	7	02238	G 01025 B
4925		BCE		1	02245	B
4926		B	TYPCK	7	02246	J 01071
4927		DCW	a#29.26a,G	6	02258	
4928		BBE	UG2E1,IAD1,1	12	02260	W 02226 01001 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
4930		ROUTINE 30.00	TEST PROGRAM AND COMPUTER RESETS, ONLY ONE TIME			
4931						
4932			IT IS RECOMMENDED THAT ONCE, DURING THE EXECUTION			
4933			OF C020B-4, TAD4 AT LOCATION 01004 BE ALTERED TO			
4934			A 1 SO THAT CERTAIN FUNCTIONS OF THE RESET KEYS			
4935			MAY BE TESTED			
4936						
4937		SUB-RTN 30.01	TEST PROGRAM RESET, OPTIONAL			
4938		NOP		1	02272	N
4939	UH	B8E	*E8,TAD4,1	12	02273	W 02292 01004 1
4940		B	US	7	02285	J 02691
4941		ZA	E500,WORK16-5	11	02292	Q 04508 04047
4942		A	WORK16-5	6	02303	A 04047
4943		D	NTABLE-9,WORK16-5	11	02309	X 04053 04047
4944		C	*,*	11	02320	C 02330 02330
4945		MLCA	EIJ,6	12	02331	D 04513 00006 T
4946	UI	B	TYPE	7	02343	J 01026
4947		DCW	APRESS PROGRAM RESET & STARTA,G	27	02376	
4948		H	UI	6	02378	. 02343
4949	UJ	MLCA	EWC1,6	12	02384	D 04518 00006 T
4950		BE	*E12	7	02396	J 02414 S
4951		CW	UK&1,UL&1	11	02403	D 02469 02503
4952		BAV	*E12	7	02414	J 02432 Z
4953		CW	UK&1,UM&1	11	02421	D 02469 02535
4954		BCV	*E12	7	02432	J 02450 W
4955		CW	UK&1,UN&1	11	02439	D 02469 02569
4956		BZ	*E12	7	02450	J 02468 V
4957		CW	UK&1,UP&1	11	02457	D 02469 02601
4958	UK	NOP		1	02468	N
4959		B	US	7	02469	J 02691
4960		B	TYPCK	7	02476	J 01071
4961		DCW	@#30.01a,G	6	02488	
4962		B8E	UQ,TAD0,1	12	02490	W 02631 01000 1
4963	UL	NOP		1	02502	N
4964		B	UM	7	02503	J 02534

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
4987	SUB-RTN 30.02		TEST COMPUTER RESET, OPTIONAL. SIMILAR TO #30.01			
4988	US	B8E	*E8,TAD4,1	12	02691	W 02710 01004 1
4989		B	VB1	7	02703	J 03157
4990		ZA	E500,WORK16-5	11	02710	M 04508 04047
4991		A	WORK16-5	6	02721	A 04047
4992		D	NTABLE-9,WORK16-5	11	02727	Z 04053 04047
4993		C	*,*	11	02738	C 02748 02748
4994		MLCA	E0U,6	12	02749	D 04523 00006 T
4995	UT	B	TYPE	7	02761	J 01026
4996		DCW	APRESS COMPUTER RESET & STARTA,G	28	02795	
4997		H	UT	6	02797	. 02761
4998	UU	MLCA	EWC1,6	12	02803	D 04518 00006 T
4999		BL	*E12	7	02815	J 02833 T
5000		CW	UVL1,UWL1	11	02822	D 02909 02943
5001		BAV	*E8	7	02833	J 02847 Z
5002		B	*E12	7	02840	J 02858
5003		CW	UVL1,UXL1	11	02847	D 02909 02977
5004		BCV	*E8	7	02858	J 02872 W
5005		B	*E12	7	02865	J 02883
5006		CW	UVL1,UYL1	11	02872	D 02909 03015
5007		BZ	*E8	7	02883	J 02897 V
5008		B	*E12	7	02890	J 02908
5009		CW	UVL1,UZL1	11	02897	D 02909 03051
5010	UV	NOP		1	02908	N
5011		B	VB	7	02909	J 03145
5012		B	TYPCK	7	02916	J 01071
5013		DCW	A#30.02A,G	6	02928	
5014		B8E	VA,TAD0,1	12	02930	W 03085 01000 1
5015	UW	NOP		1	02942	N
5016		B	UX	7	02943	J 02976
5017		B	TYPE	7	02950	J 01026
5018		DCW	A FAIL TO SET B T A2,G	18	02974	
5019	UX	NOP		1	02976	N
5020		B	UY	7	02977	J 03014
5021		B	TYPE	7	02984	J 01026

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5022		DCW	@ ARITH OFLOW NOT RESET@,G	22	03012	
5023	UY	NCP		1	03014	N
5024		B	UZ	7	03015	J 03050
5025		B	TYPE	7	03022	J 01026
5026		DCW	@ DIV OFLOW NOT RESET@,G	20	03048	
5027	UZ	NCP		1	03050	N
5028		B	VA	7	03051	J 03085
5029		B	TYPE	7	03058	J 01026
5030		DCW	@ ZERO BAL NOT RESET@,G	19	03083	
5031	VA	BBE	*E8,TAD2,1	12	03085	W 03104 01002 1
5032		B	*E2	7	03097	J 03105
5033		H		1	03104	.
5034		SW	UV&1,UW&1	11	03105	, 02909 02943
5035		SW	UX&1,UY&1	11	03116	, 02977 03015
5036		SW	UZ&1	6	03127	, 03051
5037		BBE	US,TAD1,1	12	03133	W 02691 01001 1
5038	VB	MLCS	@ @,TAD4	12	03145	D 04524 01004 3

PREVENT REPEAT OF #30.01 & #30.02

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5040	ROUTINE 31.00		MISCELLANECUS LONG ROUTINES			
5041						
5042			BECAUSE THE TIME REQUIRED TO PERFORM THIS ROUTINE			
5043			AND THE NEXT IS RELATIVELY LONG, THEY ARE DONE			
5044			ONLY THE FIRST TIME THROUGH AND THEREAFTER ONLY			
5045			WHEN THE PASS COUNT WORK AREA IS REDUCED TO ZERO.			
5046						
5047	SUB-RTN 31.01		FILL UPPER HALF OF AVAILABLE STORAGE WITH			
5048			WORD-MARK C. THEN EXECUTE THESE DS AS AT LEAST			
5049			FIVE-THOUSAND CHAINED DATA MOVE INSTRUCTIONS.			
5050			CHECK ADDRESS REGISTERS AT CONCLUSION.			
5051	VB1	NOPWM		1	03157	N
5052		B	VE2	7	03158	J 03397
5053	VC	SW	MEMSIZ	6	03165	, 01257
5054		LEH	MEMSIZ,SIZ1BL	12	03171	T 01257 04288 6
5055		SBR	*E6	7	03183	G 03195 B
5056		MLCWA	0,X2	12	03190	D 00000 00034 X
5057		CW	MEMSIZ	6	03202	D 01257
5058		SW	4900EX2,X2-4	11	03208	, 049.0 00030
5059		CS	9999EX1	6	03219	/ 099Z9
5060		SBR	*E6	7	03225	G 03237 B
5061		CS	0	6	03232	/ 00000
5062		SBR	*-7	7	03238	G 03237 B
5063		BW	*-24,4900EX2	12	03245	V 03232 049.0 1 S
5064		MRCWR	K56,9977EX1	12	03257	D 04341 099X7 M
5065		SW	4978EX2	6	03269	, 049P8
5066		MLCWS	*-11,9976EX1	12	03275	D 03275 099X6 7
5067		MLCWB	9976EX1,9975EX1	12	03287	D 099X6 099X5 P
5068		MLCWA	K55E11,4977EX2	12	03299	D 04340 049P7 X
5069		B	4966EX2	7	03311	J 04906
5070	VD	C	HOLDA4,200C002	11	03318	C 01020 04529
5071		BU	VE	7	03329	J 03365 /
5072		A	E4999,X2	11	03336	A 04533 00034
5073		C	HOLD84,X2	11	03347	C 01025 00034
5074		BE	VE1	7	03358	J 03391 S

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5075	VE	B	TYPCK	7	03365	J 01071
5076		DCW	@#31.01a,G	6	03377	
5077		B8E	VC,TAD1,1	12	03379	W 03165 01001 1
5078	VE1	SW	VB1&1	6	03391	, 03158
5079						
5080	SUB-RTN 31.02		FILL STORAGE - EXCEPT FOR APPROX THE LOWER 5100			
5081			POSITIONS - WITH A SERIES OF INDEXED BRANCH			
5082			INSTRUCTIONS ALTERNATED WITH STORE B REGISTER			
5083			INSTRUCTIONS. THIS ROUTINE, WHICH PROVIDES NO			
5084			ERROR TYPEOUT, IS EXPECTED TO PROVE THE			
5085			RELIABILITY OF INDEXING AND SBR INSTRUCTION.			
5086			INDEX REGISTER #1 IS USED BY THE ROUTINE ITSELF,			
5087			AND INDEX REGISTERS 2 THROUGH 15 ARE TESTED.			
5088						
5089	VE2	NOPHM		1	03397	N
5090		B	WA	7	03398	J 03677
5091	VF	MLCWA	TRASH,X15	12	03405	D 04472 00099 X
5092		SW	X15	6	03417	, 00099
5093		MLWB	X15,X15-1	12	03423	D 00099 00098 M
5094		SW	MEMSIZ	6	03435	, 01257
5095		LEH	MEMSIZ,KTABLE	12	03441	T 01257 04178 6
5096		SBR	*E6	7	03453	G 03465 H
5097		MLCA	0,X1	12	03460	D 00000 00029 T
5098		CW	MEMSIZ	6	03472	H 01257
5099		MLCWA	E00014,XR0	12	03478	D 04538 00024 X
5100		MLCA	E1TABLE,*E6	12	03490	D 04543 03507 T
5101	COMBAK	MLCA	0,K57&12	12	03502	D 00000 04375 T
5102		SAR	*E6	7	03514	G 03526 A
5103		MLCA	0,K57&4	12	03521	D 00000 04367 T
5104		SAR	COMBAK&5	7	03533	G 03507 A
5105		MLCA	K57&12,K58&5	12	03540	D 04375 04396 T
5106		SW	50C0	6	03552	, 05000
5107		CS	9999&X1	6	03558	/ 09929
5108		SBR	*E6	7	03564	G 03576 B
5109		CS	0	6	03571	/ 00000

C020B-4 1410 CPU ERROR DETECTION

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PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
5110		SBR	*-7	7	03577	G 03576 B
5111		BW	*-24,5000	12	03584	V 03571 05000 1
5112		SW	5091	6	03596	, 05091
5113		MRCWG	K57,9977&X1	12	03602	D 04363 099X7 L D
5114		MLCWB	9990&X1,9976&X1	12	03614	D 09920 099X6 P
5115		MLCWA	K58&6,5090	12	03626	D 04397 05090 X
5116		MLCWA		1	03638	D
5117		B	5078	7	03639	J 05078
5118	TOHERE	S	&1,XRO	11	03646	S 04544 00024
5119		BZ	*&8	7	03657	J 03671 V
5120		B	COMBAK	7	03664	J 03502
5121		SW	VE2&1	6	03671	, 03398

EXIT ROUTINE HERE AFTER 14 LOOPS

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5123			COUNT PASSES, ALLOW FOR PROGRAM MODIFICATION			
5124						
5125	WA	BNQ	INC	7	03677	J 01157 Q
5126	WB	S	81,PCCWK	11	03684	S 04544 01015
5127		BZ	*88	7	03695	J 03709 V
5128		B	START	7	03702	J 02000
5129		BBE	WC,TAD3,1	12	03709	W 03742 01003 1
5130		B	TYPE	7	03721	J 01026
5131		DCW	2-PASS-2,G	6	03733	
5132		B	LOADER	7	03735	J 00400
5133			EXIT C020B-4 HERE			
5134	WC	BW	WE,999	12	03742	V 03778 00999 1
5135	WC1	CW	IQ481	6	03754	2 01356
5136		CW	VB181,VE281	11	03760	2 03158 03398
5137		B	START	7	03771	J 02000

C020B-4 1410 CPU ERROR DETECTION

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PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5139			THE FOLLOWING SERIES OF INSTRUCTIONS IS EXECUTED			
5140			ONLY IF PROGRAM INPUT WAS FROM TAPE AND THE			
5141			OPERATOR HAS ELECTED TO REPEAT THE TEST. UNDER			
5142			THESE CONDITIONS EACH PHASE OF C020B IS RUN IN			
5143			SEQUENCE AND AFTER PERFORMING C020B-4, THE INPUT			
5144			TAPE UNIT IS BACKSPACED FOUR TIMES AND THE CYCLE			
5145			REPEATED. THE STANDARD TADS ARE NOT RESET FROM			
5146			PHASE 4 TO PHASE 1.			
5147						
5148	WE	MLCS	998,READTP&1 . SET UP TAPE CHANNEL	12	03778	D 00998 03905 3
5149		MLCS	999,READTP&10 . TO AGREE WITH THAT	12	03790	D 00999 03914 3
5150		MLCS	999,READTP&17 . USED BY	12	03802	D 00999 03921 3
5151		MLCS	999,READTP&24 . TC50	12	03814	D 00999 03928 3
5152						
5153		B	BSPTPO . BACKSPACE	7	03826	J 00982
5154		B	BSPTPO . INPUT TAPE	7	03833	J 00982
5155		B	BSPTPO . FOUR	7	03840	J 00982
5156		B	BSPTPO . TIMES	7	03847	J 00982
5157		MLCB	1003,SAVTAD	12	03854	D 01003 03888 L
5158		MRCWG	SAVTAD-3,1C0	12	03866	D 03885 00100 L
5159		B	108	7	03878	J 00108

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
5161			DATA AND INSTRUCTIONS FROM THIS POINT TO THE END			
5162			OF THE MESSAGE @PERSISTENT RD ERR. START@,G			
5163			ARE MOVED TO LOCATIONS 00100 - 00259.			
5164			ADDRESSES AFTER RELOCATION ARE GIVEN IMMEDIATELY			
5165			TO THE LEFT OF THE MNEMONIC OPERATION CODE.			
5166						
5167	SAVTAD 103	DCW	@ @	4	03888	
5168	105		@ @	2	03890	
5169	107		£10	2	03892	
5170	108	ZA	107,105	11	03893	Q 00107 00105
5171	READTP 119	RTBGW	INTAPE,1000	10	03904	L %80 01000 \$
5172	129	BEX1	119,3	7	03914	R 00119 3
5173	136	BA1	143	7	03921	R 00143 M
5174	143	BEX1	178,@	7	03928	R 00178 @
5175	150	MLCS	103,1003	12	03935	D 00103 01003 3
5176	162	MLCS		1	03947	D
5177	163	MLCS		1	03948	D
5178	164	MLCS		1	03949	D
5179	165	SW	AH£1	6	03950	• 02230
5180	171	B	START	7	03956	J 02000
5181	178	B	BSPTPO	7	03963	J 00982
5182	185	S	233,105	11	03970	S 00233 00105
5183	196	BZ	210	7	03981	J 00210 V
5184	203	B	119	7	03988	J 00119
5185	210	WCP	234	10	03995	M %10 00234 W
5186	220	BA1	210	7	04005	R 00210 M
5187	227	H	108	6	04012	• 00108
5188	233	DCW	£1	1	04018	
5189	234-259		@PERSISTENT RD ERR. START@,G	25	04043	

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

CONSTANTS AND WORK AREAS

5191				
5192				
5193	WORK16	DCW	a	8 04052
5194			£0	1 04053
5195			£1	1 04054
5196			£2	1 04055
5197			£3	1 04056
5198			£4	1 04057
5199			£5	1 04058
5200			£6	1 04059
5201			£7	1 04060
5202			£8	1 04061
5203	NTABLE		£9	1 04062
5204			QC aMNa	2 04064
5205			99	2 04066
5206			Q. aM.a	2 04068
5207			94	2 04070
5208			Q aM+a	2 04072
5209			89	2 04074
5210			Q aMca	2 04076
5211			84	2 04078
5212			Q a.Ma	2 04080
5213			79	2 04082
5214			Q a..a	2 04084
5215			74	2 04086
5216			Q a.+a	2 04088
5217			69	2 04090
5218			Q a.Oa	2 04092
5219			64	2 04094
5220			Q a+Ma	2 04096
5221			59	2 04098
5222			Q a+.a	2 04100
5223			54	2 04102
5224			Q a++a	2 04104
5225			49	2 04106

CT ADDR INSTRUCTION

OPCODE OPERAND

LABEL

PGLIN

5226				2	04108	
5227				2	04110	
5228				2	04112	
5229				2	04114	
5230				2	04116	
5231	LTABLE			2	04118	
5232				6	04124	
5233				6	04130	
5234				6	04136	
5235				6	04142	
5236				6	04148	
5237				6	04154	
5238				6	04160	
5239				6	04166	
5240				6	04172	
5241	KTABLE			6	04178	
5242				11	04189	
5243				11	04200	
5244				11	04211	
5245				11	04222	
5246				11	04233	
5247				11	04244	
5248				11	04255	
5249				11	04266	
5250				11	04277	
5251	SIZTEL			11	04288	
5252	K46			1	04289	
5253	K47			1	04290	
5254	K48			1	04291	
5255	K49			7	04292	J 03754
5256				1	04299	
5257	K50			6	04305	
5258	K51			6	04311	
5259	K52			5	04316	
5260	K53			6	04322	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
5261	K54		29 .,-02	6	04328	
5262	K55	SCNLS	50C0EX2,9999EX1	12	04329	D 050.0 099Z9
5263	K56	SAR	HOLDA4	7	04341	G 01020 A
5264		SBR	HOLDB4	7	04348	G 01025 B
5265		B	VD	7	04355	J 03318
5266		DCW	2+2	1	04362	
5267	K57	B	0	7	04363	J 00000
5268		SBR	0	7	04370	G 00000 B
5269		B	TOHERE	7	04377	J 03646
5270		DCW	2M2	1	04384	
5271		CW	5099	6	04385	2 05099
5272	K58	SAR	0	7	04391	G 00000 A
5273		DCW	2-+0EEX+0E-+0E-+0E-+0E-+0E+2	25	04422	
5274		DC	2+0E-00E-+EE-+0+-+0E0+0E-EE	25	04447	
5275	TRASH		20E-+EE-+0C-+0EE+0E-+0E-+02	25	04472	
5276						
5277		LTORG	*		04473	
5277			2001 2	4	04476	
5277			E5	1	04477	
5277			2ACD2	3	04480	
5277			2N00E2	4	04484	
5277			2J0M2	3	04487	
5277			2X0 002	5	04492	
5277			E5C	2	04494	
5277			2X 5502	5	04499	
5277			2 .02	3	04502	
5277			28 2	3	04505	
5277			E500	3	04508	
5277			UJ	5	04513	02384
5277			WC1	5	04518	03754
5277			UU	5	04523	02803
5277			2 2	1	04524	
5277			20C0002	5	04529	
5277			E4999	4	04533	
5277			E0C014	5	04538	

SUMMARY

- I. There are four System Control Cards in C020B; they are the first data cards in each of the four phases and one numbered 001, 184, 366 and 549. Cards 001 and 549 provide information to program phases 1 and 4 regarding CPU storage capacity. Data on cards 184 and 366 are not required by this program.
- II. C020B must be loaded by means of the Card Load Program L1A or Tape Control Program TC50 (). Proper operation of C020B depends upon data that are placed in memory by these programs.
- III. TAD 4 at location 01004 is the only special TAD used by this program. If set to "1", subroutine Nos. 30.01 and 30.02 will be included in the test during C020B-4. Subroutines 30.01 and 30.02 require manual intervention and contain programmed Halt instructions. TAD 4 may be set to "1" by the CE during any of the four phases; it will be reset to a blank by the program after performing subroutine No. 30.02.

